

Regional Report on
Animal Genetic Resources:
Southwest Pacific



The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by the Food and Agriculture Organization of the United Nations in preference to others of a similar nature that are not mentioned.

The views expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Food and Agriculture Organization of the United Nations.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to:

Chief

Electronic Publishing Policy and Support Branch

Communication Division

FAO

Viale delle Terme di Caracalla, 00153 Rome, Italy

or by e-mail to:

copyright@fao.org

© FAO 2007

Citation: FAO. 2007. Regional report on animal genetic resources: Southwest Pacific. Annex to *The State of the World's Animal Genetic Resources for Food and Agriculture*. Rome.

Contents

Introduction	5	
Part 1	Regional factsheet: Southwest Pacific	7
1 Livestock production systems		7
2 Animal genetic resources		7
References		14
Part 2	Regional priorities: Southwest Pacific	15

TABLES

1. Total population size and number of breeds of the major livestock species in the Southwest Pacific and their share of the world total	8
2. Transboundary mammalian breeds in the Southwest Pacific region	9
3. Transboundary avian breeds in Southwest Pacific	10

FIGURES

1. Risk status of mammalian breeds recorded in the Southwest Pacific up to December 2005: absolute (table) and relative (chart) figures	11
2. Risk status of avian breeds recorded in the Southwest Pacific up to December 2005: absolute (table) and relative (chart) figures	12
3. Population data status and index for mammalian breeds recorded by countries of the Southwest Pacific region up to December 2005	13

Introduction

This document is one of a set of subregional and regional reports prepared as part of the Annex to *The State of the World's Animal Genetic Resources for Food and Agriculture*. It consists of two sections:

- a factsheet; and
- a synthesis of priorities.

The factsheet provides a short introduction to the region's livestock production systems and an overview of the status of its animal genetic resources. The priorities presented in this report were the outcome of a workshop on Animal Genetic Resources for Food and Agriculture held in Nadi, Fiji, 25 May to 26 May 2006, at which thirteen countries of the Southwest Pacific participated, plus the Secretariat of the Pacific Community (SPC).



Regional factsheet: Southwest Pacific

For the purposes of this report, the Southwest Pacific region comprises Australia, the Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Zealand, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

1 Livestock production systems

Australia and New Zealand account for by far the largest share of livestock production in this region. Livestock keeping in both countries is predominantly grassland-based. Conversely, the mixed rainfed livestock production system of the humid and subhumid tropics and subtropics dominates the many small island states of the region. Because of this contrast terms of size and production system, presenting average production data for the whole region is not particularly informative.

In Australia, the grassland-based production system of the arid/semi-arid tropics and subtropics is the most important. However, there are also substantial areas of grazing land in the humid/subhumid zones. The ratio of agricultural land per inhabitant is high. Cattle numbers and sheep and goat numbers are high compared to human population figures. Some stock is finished in feedlots. In the temperate grassland-based systems of New Zealand, dairy production is important.

The high availability of ruminant meat implies that a considerable amount of this produce is available for export. Monogastric meat and poultry eggs are almost exclusively produced in intensive landless production.

In the mixed rainfed production systems of the small island states, there is a fairly lower ratio of ruminants per person: four persons per head of cattle and eight per small ruminant. The dairy herd is about 10 percent of the total cattle herd, with average milk yields of 1 350 kg per cow per year. Ruminant meat is available at 7 kg per person per year, and of this value, 0.5 kg derives from small ruminant meat. Pig and poultry production is more significant, both in land-based and landless systems.

2 Animal genetic resources

Table 1 illustrates the number of animals of each major livestock species in the Southwest Pacific region and also gives an estimate of the number of breeds. The importance of sheep in the region is reflected by the relatively large share of the world population that is found in this region. Although the pig population is not large in absolute terms, the region has large number of pig breeds, and accounts for 9 percent of the total number of pig breeds in the world. Tables 2 and 3, respectively, show the transboundary mammalian and avian breeds in Southwest Pacific.

SOUTHWEST PACIFIC

TABLE 1

Total population size and number of breeds of the major livestock species in the Southwest Pacific and their share of the world total

	Population size (×1 000)	Number of national breed populations	Share of world total	
			Population (%)	Number of breed populations (%)
Buffalo	0	2	0	1
Cattle	36 488	136	3	5
Goat	833	30	0	3
Sheep	134 554	87	13	4
Pig	3 695	114	0	9
Ass	9	3	0	2
Horse	364	65	0	5
Dromedary	0	0	0	2
Chicken	116	75	1	3
Duck ¹	816	22	1	7
Turkey	1 540	8	2	5
Goose (domestic)	0	10	0	4

¹ Domestic duck and Muscovy duck

Source for population data: FAOSTAT estimates of 2004 live animal populations.

TABLE 2
Transboundary mammalian breeds in the Southwest Pacific region

Mammalian breeds			
Cattle	(Cattle)	(Horse)	Sheep
Aberdeen-Angus	Red Poll	Belgian Warmblood	Australian Merino
Africander	Red Sindhi	Caspian	Awassi
Australian Friesian Sahiwal	Romagnola	Cleveland Bay	Barbados Black Belly
Australian Milking Zebu	Sahiwal	Clydesdale	Booroola Merino
Ayrshire	Salers	Connemara Pony	Border Leicester
Bali	Santa Gertrudis	Dales	Cheviot
Bazadais	Senepol	Danish Warmblood	Comeback
Belgian Blue	Shorthorn	Dartmoor Pony	Coopworth
Belmont Red	Simbrah	Exmoor Pony	Cormo
Belted Galloway	Simford	Falabella Pony	Corriedale
Blonde D'aquitaine	Simmental	Fjord	Damara
Bonsmara	South Devon	Friesian	Dohne Merino
Boran	Sussex	Hackney	Dormer
Braford	Texas Longhorn	Hackney Pony	Dorper
Brahman	Tuli	Haflinger	Dorset Down
Brangus	Welsh Black	Hanoverian	Dorset Horn
British White	White Park	Highland Pony	Drysdale
Brown Swiss		Iceland Pony	East Friesian
Charbray	Deer	Irish Draught	Finnish Landrace
Charolais	Axis deer (<i>Axis axis</i>)	Lipitsa	Hampshire Down
Chianina	Fallow Deer (<i>Cervus dama</i>)	Lusitanian	Karakul
Dairy Shorthorn	Hog Deer (<i>Axis porcinus</i>)	New Forest Pony	Leicester Longwool
Devon	Red Deer (<i>Cervus elaphus</i>)	Oldenburg	Lincoln Longwool
Dexter	Rusa deer (<i>Cervus timorensis</i>)	Palomino	Perendale
Droughtmaster	Sambar deer (<i>Cervus unicolor</i>)	Percheron	Poll Dorset
Galloway		Quarter Horse	Poll Merino
Gelbvieh	Goat	Shetland Pony	Polwarth
Guernsey	Anglo-Nubian	Shire	Romney
Hereford	Angora	Suffolk	Ryeland
Highland	Australian feral	Swedish Warmblood	Shropshire
Holstein (black and white)	Boer	Tennessee Walking Horse	South African Mutton Merino
Holstein (red and white)	British Alpine	Thoroughbred	South Dorset Down
Illawarra Shorthorn	Cashmere	Welsh Pony	South Down
Japanese Native	Fiji		South Suffolk
Jersey	Kalahari Red	Pig	Spanish Merino
Limousin	Kiko	Berkshire	Suffolk
Lincoln Red	Saanen	Duroc	Swedish Fur
Longhorn	Toggenburg	Hampshire	Texel
Luing		Kunekune	Tukidale
Maine-Anjou	Horse	Landrace	Wiltshire Horn
Murray Grey	American Saddle Horse	Large Black	
Piedmont	American Trotter	Large White	
Pinzgau	Andalusian	Poland China	
Polled Hereford	Appaloosa	Saddleback	
Polled Shorthorn	Arab	Tamworth	
Red Angus	Belgian Draft	Wessex Saddleback	

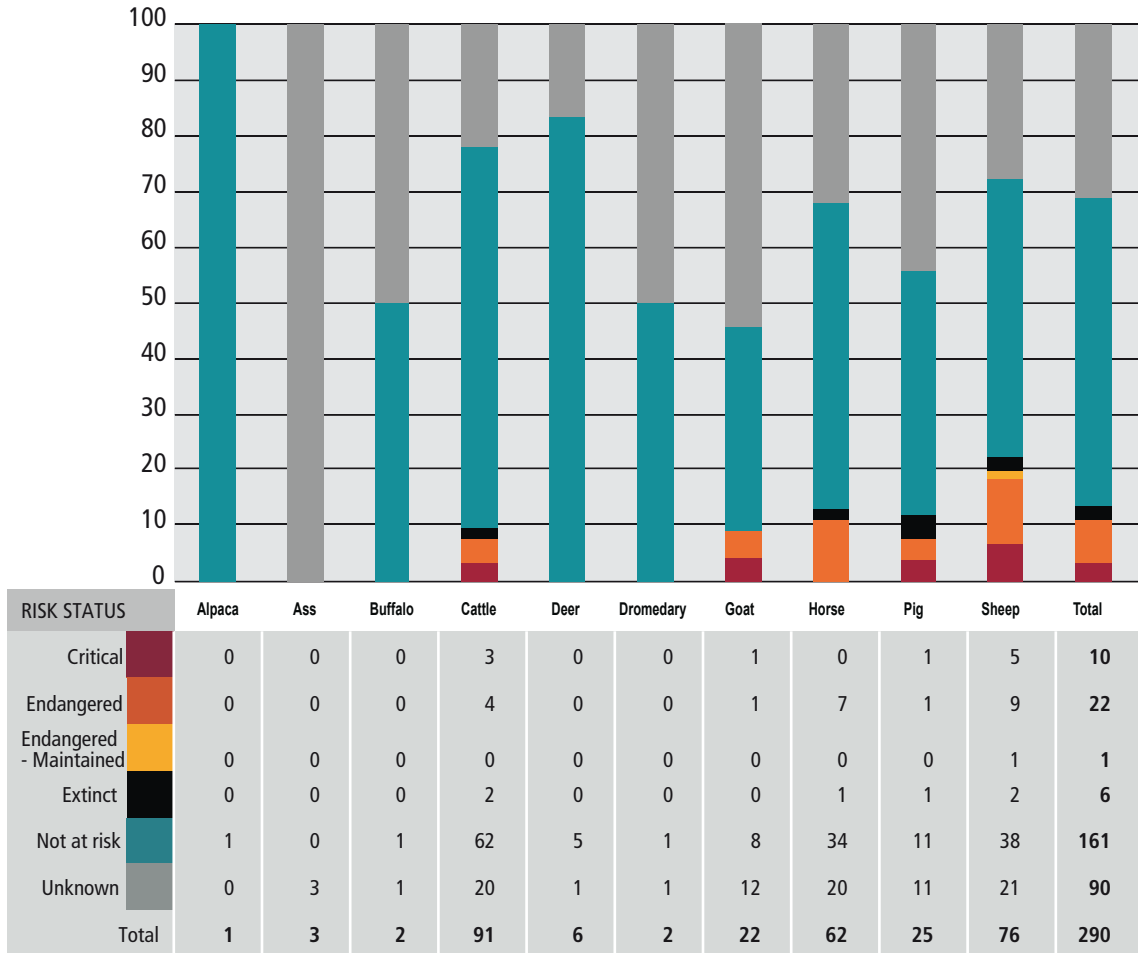
SOUTHWEST PACIFIC

TABLE 3
Transboundary avian breeds in Southwest Pacific

Avian breeds			
Chicken	(Chicken)	(Chicken commercial strains)	Emu
Ancona	Minorca	layer, Hy-Line	Emu
Andalusian	Modern Game	layer, Leghorn	
Araucana	New Hampshire	layer, Shaver	Muscovy Duck
Australorp	Old English Game	layer, Shaver 579	Muscovy
Barnevelder	Orpington		
Black Australorp	Plymouth Rock		Ostrich
Brahma	Plymouth Rock Barred	Duck (Domestic)	African Black
Campine	Polish	Aylesbury	Kenyan Red
Cochin	Rhode Island Red	Blue Swedish	
Croad Langshan	Silkie	Cayuga	Turkey
Dorking	Spanish	Crested	Black
Faverolle	Sussex	Indian Runner	Bourbon Red
Frizzle	Transylvanian Naked Neck	Khaki Campbell	Bronze
Hamburg	Welssummer	Orpington	Narragansett
Hampshire	Wyandotte	Pekin	White
Houdan		Rouen	
Indian Game	Chicken commercial strains	Saxony	
Jungle Fowl	broiler, Shaver Redbro	Welsh Harlequin	
Malay Game	layer, Cobb 500		
	layer, H&N Brown Nick		

Figures 5 and 6 illustrate the structure of the data recorded in the Global Databank for Farm Animal Genetic Resources, showing the risk status of the mammalian and avian breeds recorded for each species in the Southwest Pacific region up to 2005. Approximately 16 percent (25 out of 158) of extant mammalian and avian breeds in Southwest Pacific are categorized as at risk. However, this is probably an underestimate of the actual situation, primarily due to a lack of information.

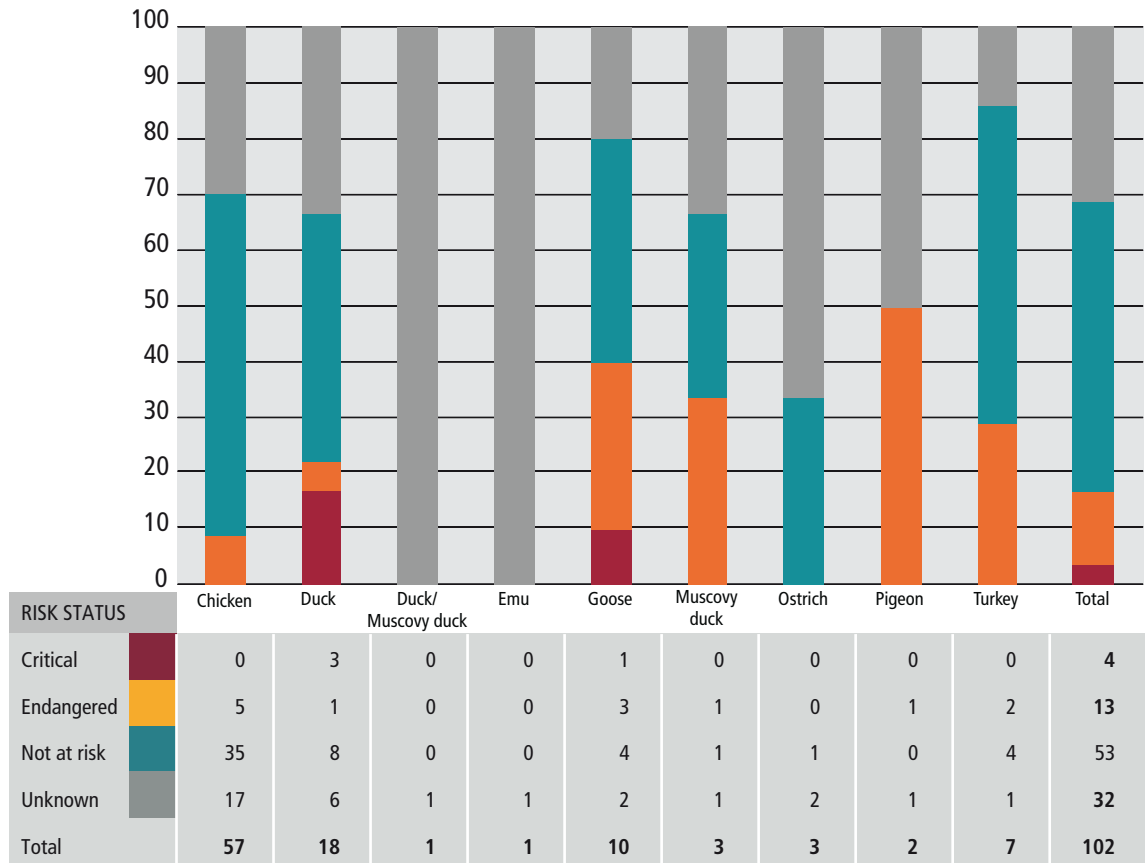
FIGURE 1
Risk status of mammalian breeds recorded in the Southwest Pacific* up to December 2005: absolute (table) and relative (chart) figures



* Breeds that are also recorded in countries outside Southwest Pacific are excluded from the analysis.

**SOUTHWEST
PACIFIC**

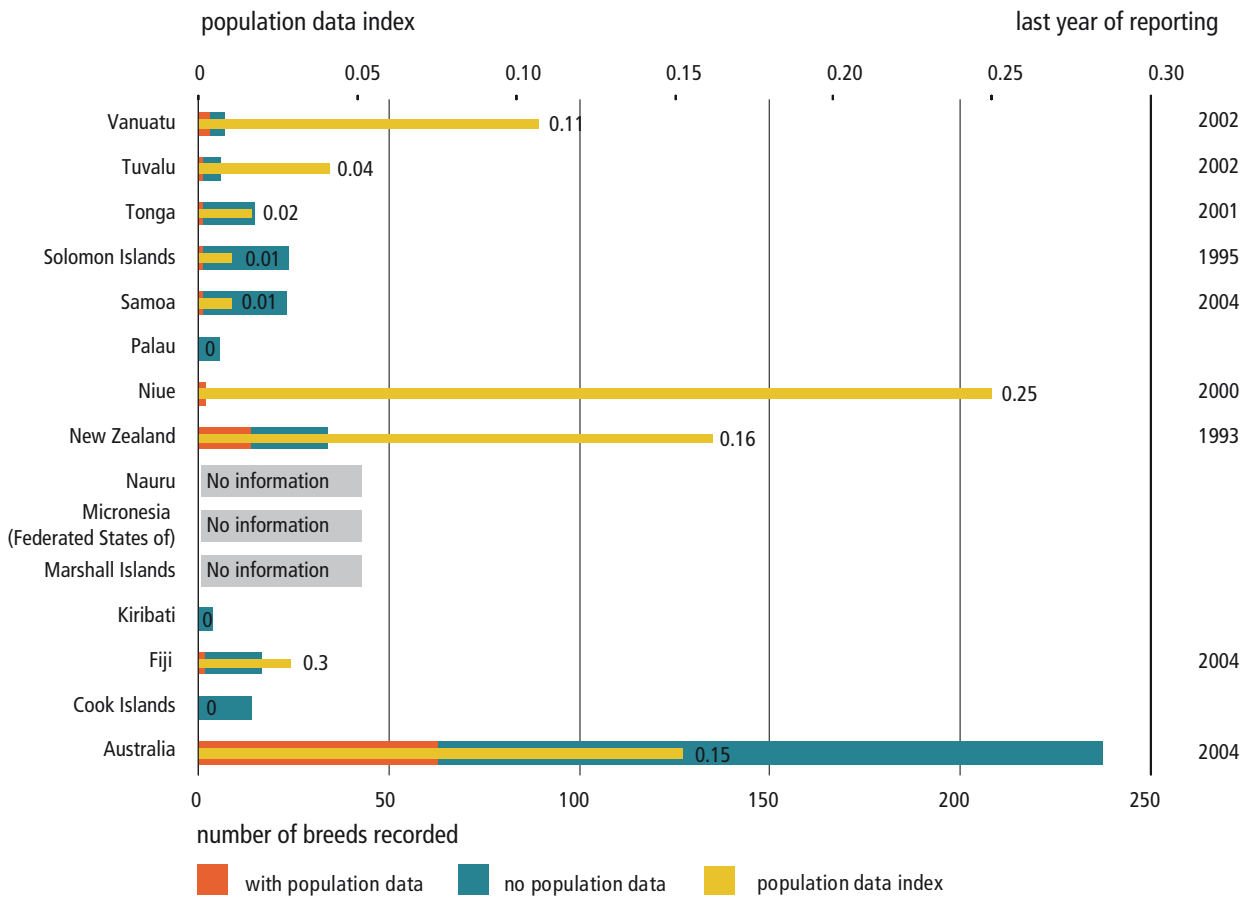
FIGURE 2
Risk status of avian breeds recorded in the Southwest Pacific* up to December 2005: absolute (table) and relative (chart) figures



* Breeds that are also recorded in countries outside Southwest Pacific are excluded from the analysis.

Figures 3 and 4 provide general overviews of the quantity and quality of the population data provided by each country for their animal genetic resources. The total number of breeds recorded by each country is shown. For all countries, breeds are split into those **with population data** and those **with no population data** (risk status unknown). When one or more fields in the Global Databank for Farm Animal Genetic Resources are completed then that breed is identified as having population data. For those breeds recorded as having population data, a population data index (PDI) is calculated, which provides an indication of the completeness of the data provided by the country. Selected basic population data fields, regarded as being the most important and used in the calculation of risk status, are considered: population size (absolute or range), number of breeding females, number of breeding males and the percentage of females bred to males of the same breed (FAO/UNEP, 2000).

FIGURE 3
Population data status and index for mammalian breeds recorded by countries of the Southwest Pacific region up to December 2005



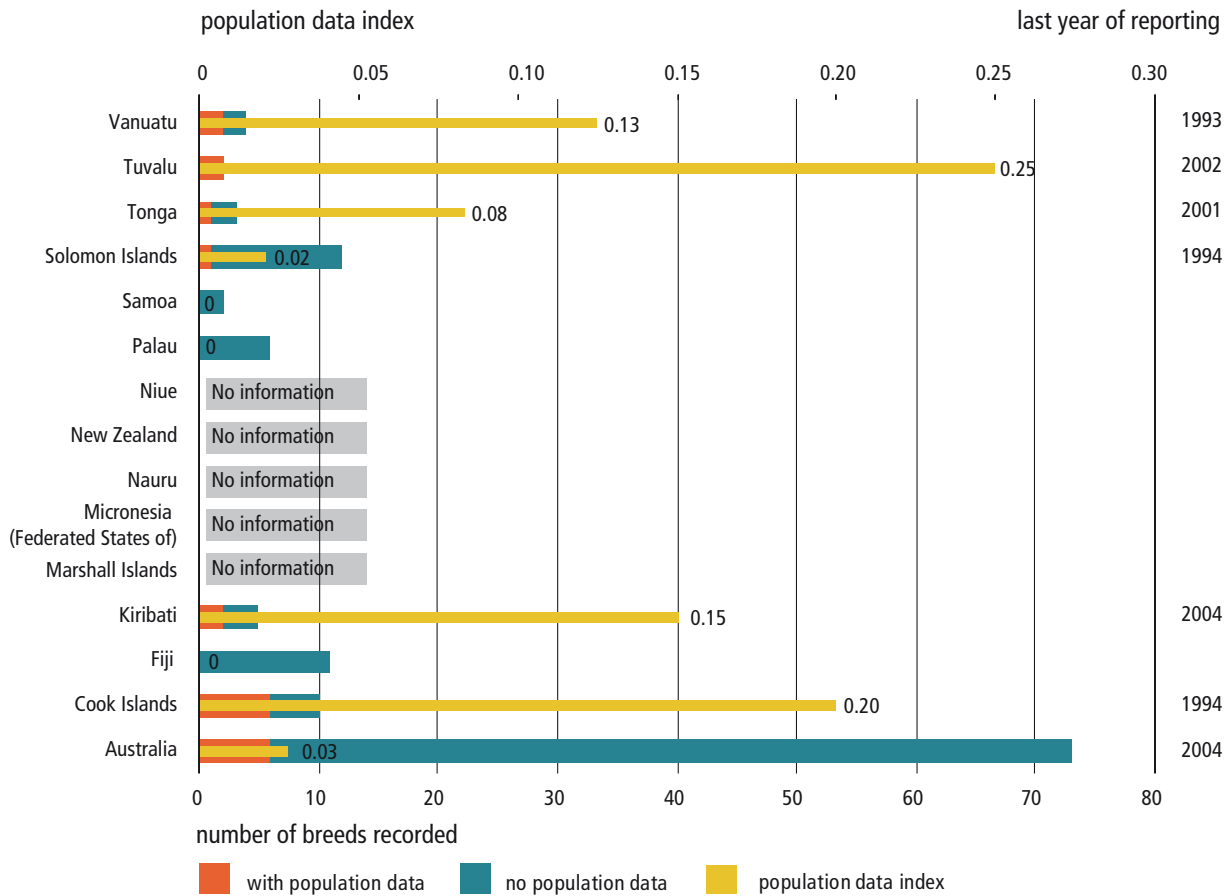
With population data – Those breeds with information recorded in one or more of the 16 population data fields.

No population data – Those breeds with no information recorded in any of the 16 population data fields.

Population Data Index (PDI) – For each country the PDI was calculated only for those breeds recorded as having population data. The PDI is the fraction of selected population data fields (population size, number of breeding females, number of breeding males and the percentage of females bred to males of the same breed) that contain information, averaged across breeds.

**SOUTHWEST
PACIFIC**

FIGURE 4
Population data status and index for avian breeds recorded by countries of the Southwest Pacific region up to December 2005



With population data – Those breeds with information recorded in one or more of the 16 population data fields.

No population data – Those breeds with no information recorded in any of the 16 population data fields.

Population Data Index (PDI) – For each country the PDI was calculated only for those breeds recorded as having population data. The PDI is the fraction of selected population data fields (population size, number of breeding females, number of breeding males and the percentage of females bred to males of the same breed) that contain information, averaged across breeds.

References

FAOSTAT. (available at <http://faostat.fao.org>).

FAO/UNEP. 2000. World watch list for domestic animal diversity – 3rd edition, edited by B. Scherf. Rome.



Regional priorities: Southwest Pacific

RESOLUTION of the workshop on Animal Genetic Resources for Food and Agriculture held in Nadi, Fiji from 25 May to 26 May 2006.

Thirteen countries of the Southwest Pacific plus the Secretariat of the Pacific Community (SPC) participated, and agreed on the priorities listed below.

Given:

- the erosion of our animal genetic diversity for food and agriculture as a result of the increasing use of exotic breeds throughout the region;
- against a backdrop of decreasing levels of diversity of animal genetic resources for food and agriculture (AnGR) throughout the developing world; and
- recognizing the desire by Pacific Island Countries and Territories (PICTS) to increase local animal production in response to the growing demand for AnGR and their products;
- the participants at this workshop which includes member countries and territories of the Secretariat of the Pacific Community (SPC) therefore **RESOLVE THAT** the following needs should be addressed urgently:

Policy and regulatory needs

- The formulation of national and regional policies that support the development and preservation of AnGR.
- The review of existing legislation on livestock with special reference to the conservation, development and sustainable utilization of AnGR.
- The development of national legislation as appropriate.
- Measures required to minimize and/or reverse the erosion/depletion of all AnGR and promote the appropriate utilization of AnGR, with special emphasis on indigenous and/or endemic breeds.
- The establishment of a regional network on AnGR

Inventory and characterization needs

- The collation of existing inventories of AnGR into a single easily accessible regional database, including the development of a common template on AnGR characteristics and use.
- The construction of a regional AnGR information network to meet the needs for information sharing and communication as well as participating in international databases.
- The detailed assessment of the characteristics and value of the region's AnGR using standardized formats, and a detailed assay of the local and regional genetic diversity of the indigenous AnGR.
- Design appropriate conservation and utilization programmes using the genetic diversity information generated from characterization studies.
- The sourcing of funds for national and regional surveys of AnGR status, use and trends, using tools developed for other regions.
- The information thus generated will be used to define country and regional policies for livestock development – SPC is to assist and coordinate funding and the conduct of the survey.
- The ongoing monitoring of the status of breeds in the region, with a focus on indigenous/ endemic breeds.
- The establishment of regional expertise in livestock genetics.
- The assessment of the available breeds to gain knowledge of the value of germplasm including traditional knowledge.

**SOUTHWEST
PACIFIC*****Conservation, sustainable utilization and development needs***

- The audit of those breeds that are currently available in the countries of the region in order to identify gaps in conservation and sustainable utilization (in situ and ex situ).
- The collecting of AnGR for ex situ conservation – live collection and cryopreservation of semen, eggs, embryos, hair, etc.
- Based on the inventories, characterization and audit of breeds, consideration to be given to the development of in situ conservation programmes (on farms).
- The development of breeding programmes to maintain genetic integrity as well as enhance the genotypes for sustainable utilization.
- Consideration, and as appropriate, the introduction of education and marketing programmes to increase the value of and create demand for the diversity of AnGR for food and agriculture within the region, with a focus on indigenous/endemic breeds.
- The promotion of sociocultural values for indigenous/endemic breeds.