

Status and trends of animal genetic resources

1 Introduction

The monitoring system for the implementation of the Global Plan of Action for Animal Genetic Resources (FAO, 2007a) consists of two elements. One line of reporting focuses on the process of implementing the Global Plan of Action (see Part 3 and FAO, 2014a). The other focuses on animal genetic resources (AnGR) themselves, as the state of these resources constitutes a measurable indicator of the success of the Global Plan of Action (FAO, 2013a).

Data for monitoring the status and trends of AnGR on a world scale are drawn from the Global Databank for Animal Genetic Resources, a database of breed-related data that FAO began to build up in the early 1990s. Since 1995, the Global Databank has formed the backbone of the Domestic Animal Diversity Information System (DAD-IS). Data from the Global Databank were used to prepare three editions of the *World Watch List for Domestic Animal Diversity* (FAO, 1993; 1995; 2000), as well as *The State of the World's Animal Genetic Resources for Food and Agriculture* (first SoW-AnGR) (FAO, 2007b). They have subsequently been used to prepare biennial reports on the status and trends of AnGR (FAO, 2009; 2011; 2013b; 2014b).

This section presents a global overview of the diversity and status of AnGR. The analysis is based on DAD-IS data made available by countries by June 2014. It serves as an update of the analysis presented in the first SoW-AnGR, which was based on data from 2006.¹ Box 1B1 outlines changes in the approach to reporting and data analysis

that have been introduced for the second SoW-AnGR process. The section begins by describing the state of reporting on AnGR and the progress made in this respect during the period between January 2006 and June 2014. A description of the current regional distribution of livestock species and breeds is then presented, followed by an overview of the risk status of the world's livestock breeds. Trends in risk status are then described.

2 The state of reporting

As breed population data are provided by individual countries, the basic unit from which an analysis of global status and trends has to be built is the national breed population. The number of national breed populations recorded in the Global Databank for Animal Genetic Resources increased from 2 719 in 1993 to 5 330 in 1999 and 14 017 in 2006 when the first SoW-AnGR was drafted. By June 2014, the total number of entries had risen to 14 869 (Table 1B1). While the number of national breed populations recorded rose sharply during the period preceding the preparation of the first SoW-AnGR, the percentage for which any population data had been recorded declined. These figures have improved since 2006 as a result of population data being added to the records in the Global Databank (Table 1B1). However, as shown in Figure 1B1, many gaps remain. Moreover, even where some population data have been reported, many have not been recently updated (see further discussion below). It should also not be assumed that the national breed inventories recorded in DAD-IS are complete. As

¹ FAO, 2007a, Part 1 Section B (pages 23–49).

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Box 1B1

Developments since the publication of the first report on *The State of the World's Animal Genetic Resources for Food and Agriculture*

Following the publication of *The State of the World's Animal Genetic Resources for Food and Agriculture* (first SoW-AnGR) and the adoption of the Global Plan of Action for Animal Genetic Resources in 2007, the Commission on Genetic Resources for Food and Agriculture, in 2009, agreed a schedule and a format for reporting on the status and trends of animal genetic resources (AnGR). It was agreed that a report would be prepared every two years, based on a template derived from the structure of relevant section (Part 1 Section B) of the first SoW-AnGR. It was agreed that the status and trends reports should include the Convention on Biological Diversity's headline indicator for "trends in genetic diversity of domesticated animal species of major socio-economic importance", once this indicator had been developed (a task which fell to FAO under the auspices of the Commission).

In 2013, the Commission agreed to the use of the following set of indicators:

- the number of locally adapted breeds;
- the proportion of the total population accounted for by locally adapted and exotic breeds; and
- the number of breeds classified as at risk, not at risk and unknown.

To allow the indicators to be calculated, the Commission agreed to the use of a new breed classification system, distinguishing "locally adapted" breeds from "exotic" breeds (see Box 1B2). DAD-IS was then adapted so as to allow countries to allocate their breed records to the appropriate classes (exotic or locally adapted). In June 2014, when the analysis

of status and trends was performed, this allocation procedure had not been completed. A provisional indicator set, based on a provisional categorization of breeds, is presented in the status and trends report for 2014 (FAO, 2014b).

Also in 2013, the Commission agreed to additional changes to the reporting framework, with the aim of providing a more realistic picture of the state of reporting and eliminating some confounding factors that made it difficult to interpret trends in risk status. First, in order to address the potentially misleading effects of including breeds for which no recent population data are recorded in DAD-IS in the analysis of risk-status trends, a decision was taken to introduce a ten-year cut-off point after which a breed is re-assigned to the "unknown" risk-status category (see Box 1B3) if its population data are not updated. Second, it was agreed that trends in breed risk status should be calculated based on the most up-to-date current and historical data available in DAD-IS at the time of calculation, rather than by comparing current data to those presented in older reports. Historical population data recorded in DAD-IS can be updated at any time, as can countries' breed inventories (breed records can be added or deleted). The new calculation method allows any recent updates of this kind to be taken into account. The revised calculation methods were used in the preparation of the 2014 status and trends report and in the preparation of the second SoW-AnGR. One consequence is that, compared to the first SoW-AnGR (and previous status and trends reports), a higher proportion of breeds are currently classified as being of unknown risk status.

discussed in Part 3 Section B, many countries consider that they have not yet established comprehensive breed inventories at national level, and it is also likely that not all identified breeds have been entered into DAD-IS, particularly in the case of species that are not regarded as priorities in the respective countries.

3 Species diversity and distribution

DAD-IS records breed-related information on 19 mammalian species, 17 avian species and two fertile interspecies crosses (Bactrian camel × dromedary and duck × Muscovy duck). As was the case when

Box 1B2

Glossary: populations, breeds, breed classification systems and regions**Classification of populations as domesticated, wild or feral**

Domestic(ated) animals: animals whose breeding and husbandry are controlled by human communities to obtain benefits or services from them. The process of domestication may take many generations of the species to be completed.

Wild populations: wild relatives of domesticated livestock, wild populations that are used for food and agriculture, or populations undergoing domestication.

Feral populations: populations whose ancestors were domesticated, but which now live independently of humans; for example, dromedaries in Australia.

Breed classification related to geographic distribution

Local breeds: breeds that occur only in one country.

Transboundary breeds: breeds that occur in more than one country.

Regional transboundary breeds: transboundary breeds that occur only in one of the seven SoW-AnGR regions.

International transboundary breeds: transboundary breeds that occur in more than one SoW-AnGR region.

Breed classification related to adaptedness

Locally adapted breeds: breeds that have been in the country for a sufficient time to be genetically adapted to one or more of the traditional production systems or environments in the country. The phrase “sufficient time” refers to time present in one or more of the country’s traditional production systems or environments. Taking cultural, social and genetic aspects into account, a period of 40 years and six generations of the respective species might be considered as a guiding value for “sufficient time”, subject to specific national circumstances. Indigenous breeds, also termed autochthonous or native breeds form a subset of locally adapted breeds.

Exotic breeds: breeds that are not locally adapted. Exotic breeds comprise both recently introduced breeds and continually imported breeds.

SoW-AnGR regions

Seven regions were defined for the SoW-AnGR: Africa, Asia, Europe and the Caucasus, Latin America and the Caribbean, the Near and Middle East, North America and the Southwest Pacific – see Figure 1 (preliminary pages).

TABLE 1B1

Status of information recorded in the Global Databank for Animal Genetic Resources

Year of analysis	Mammalian species		Avian species		Countries covered
	Number of national breed populations	% with population data	Number of national breed populations	% with population data	
1993	2 719	53	-	-	131
1999	5 330	63	1 049	77	172
2006	10 512	43	3 505	39	181
2014	11 062	60	3 807	56	182

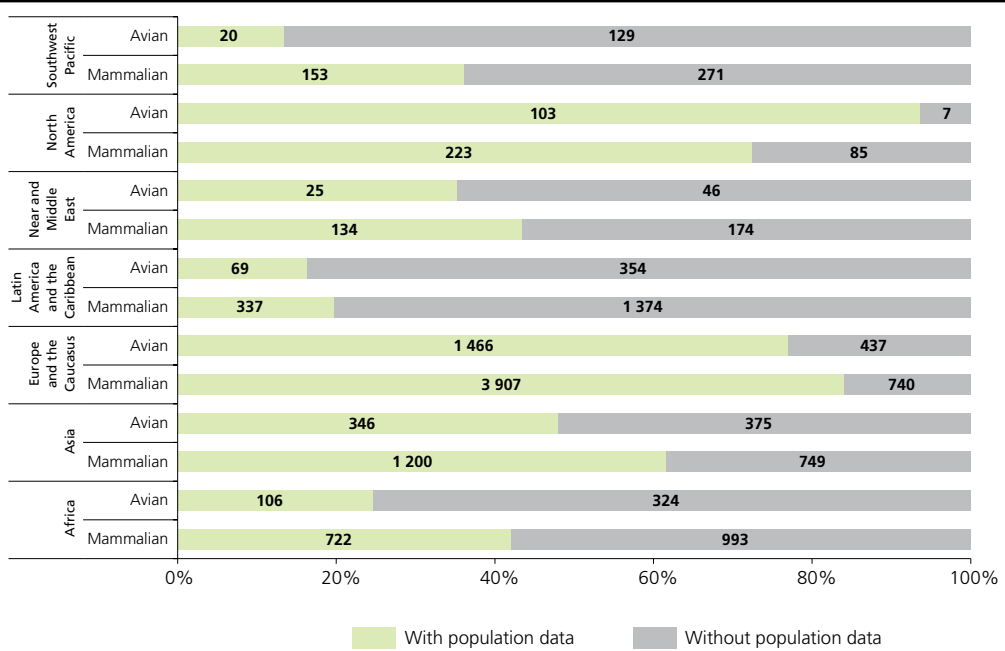
Note: As of June 2014, no breed data had been recorded in DAD-IS from Andorra, Brunei Darussalam, Liechtenstein, Marshall Islands, Micronesia (Federated States of), Monaco, Nauru, Qatar, San Marino, Singapore, South Sudan, Timor-Leste, United Arab Emirates or Western Sahara. “With population data” figures refer to breed populations for which population data are recorded for any year up to 2014. The ten-year cut-off point (see Box 1B1) is not applied to these figures.

Source: DAD-IS (accessed July 2014).

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FIGURE 1B1

Proportion of national breed populations for which population figures have been reported



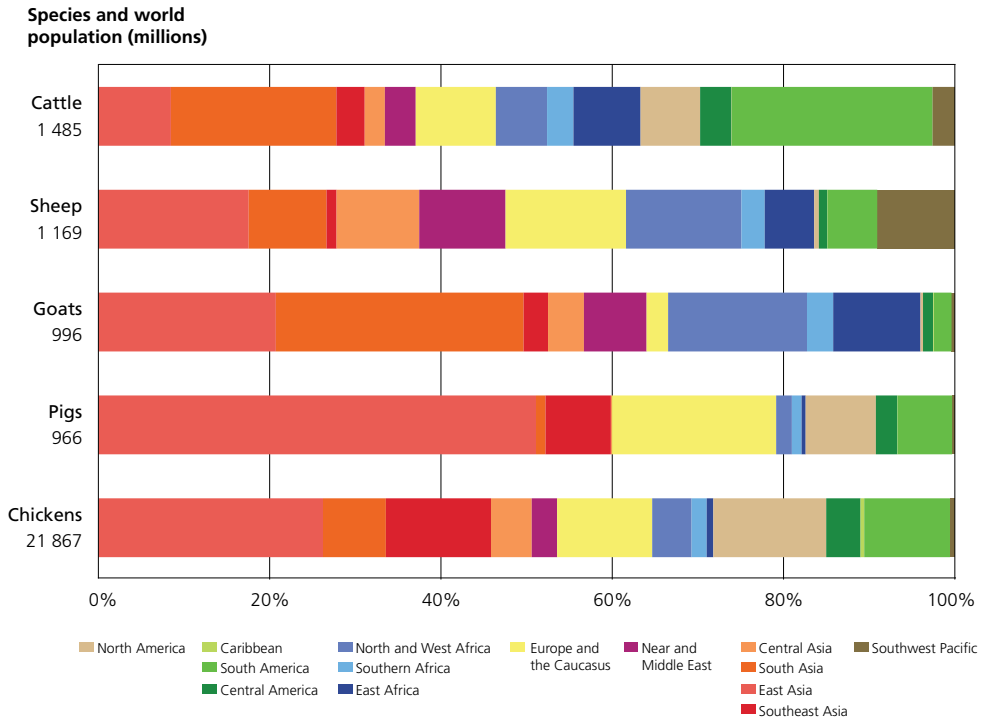
Note: "With population data" figures refer to breed populations for which population data are recorded for any year up to 2014. The ten-year cut-off point (see Box 1B1) is not applied to these figures.
 Source: DAD-IS (accessed July 2014).

the first SoW-AnGR was published, five species – cattle, sheep, chickens, goats and pigs (the so-called “big five”) – are widely distributed across the world and have particularly large global populations. The first three are the most widely distributed livestock species globally, while the latter two are less evenly spread (Figure 1B2). The total global population of each of these species increased between 2005² and 2012. Figures from FAO’s statistical database FAOSTAT show an increase of 23 percent in the chicken population, 12 percent in the goat population, 10 percent in the pig population, 7 percent in the cattle population and 4 percent in the sheep population over this period.³

The world’s cattle population reached almost 1.5 billion in 2012. Asia accounts for one-third of the total (highest numbers in India and China, together accounting for about 22 percent of the world total). Latin America accounts for 27 percent (highest numbers in Brazil, alone accounting for 14 percent of the global total), Africa for 17 percent (highest numbers in Ethiopia and the United Republic of Tanzania), Europe and the Caucasus for 9 percent (highest numbers in the Russian Federation and France), North America for 7 percent (highest numbers in the United States of America), the Near and Middle East for 4 percent (highest numbers in Sudan and Egypt) and the Southwest Pacific for 3 percent (highest numbers in Australia). The pattern of regional distribution has not changed greatly since 2005. Asia and Africa have increased their shares of the world total, while the shares of

² The analysis of species diversity and distribution presented in the first SoW-AnGR was based on FAOSTAT figures for 2005.
³ Calculations based on FAOSTAT data accessed September 2014.

FIGURE 1B2
Regional distribution of livestock species in 2012



Source: FAOSTAT.

Latin America and the Caribbean, North America, and Europe and the Caucasus have declined. In the latter two regions, the cattle population has fallen slightly in absolute terms.

The world's sheep population reached almost 1.2 billion in 2012. Asia accounts for 37 percent of the total (highest numbers in China and India), Africa for 22 percent (highest numbers in Nigeria and Ethiopia), Europe and the Caucasus for 14 percent (highest numbers in the United Kingdom and Turkey), the Near and Middle East for 10 percent (highest numbers in Sudan and the Syrian Arab Republic), the Southwest Pacific for 9 percent (highest numbers in Australia and New Zealand), Latin America and the Caribbean

for 7 percent (highest numbers in Brazil and Argentina) and North America for 1 percent. The most dramatic change in the regional distribution of the world's sheep population since 2005 has been a sharp decline in the proportion of the global population accounted for by the Southwest Pacific (share of the total falling by 4 percent; population size falling by 25 percent in absolute terms). The sheep populations of North America and Europe and the Caucasus have also declined, both in absolute size and in terms of global share. In contrast, Africa and Asia account for larger shares of the world sheep population than they did in 2005, with Africa's sheep population having risen by 19 percent in absolute terms.

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The world's goat population reached approximately 1 billion in 2012. Goats are widely distributed in developing regions, but less so in developed regions. Asia (56 percent; highest numbers in China and India), Africa (30 percent; highest numbers in Nigeria and Kenya) and the Near and Middle East (7 percent; highest numbers in Sudan and Yemen) account for the vast majority of the world's goats. There are also significant populations in Latin America and the Caribbean (3 percent; highest numbers in Mexico and Brazil) and in Europe and the Caucasus (3 percent; highest numbers in Turkey and Greece). The main change since 2005 has been a large increase in Africa's goat population (share of the global total rising by 4 percent, and population size rising by 27 percent in absolute terms).

The world's pig population reached almost 1 billion in 2012. Asia accounts for 60 percent of the world total, with China alone accounting for 49 percent. Europe and the Caucasus accounts for 19 percent (highest numbers in Germany and Spain), Latin America and the Caribbean for 9 percent (highest numbers in Brazil and Mexico), North America for 8 percent (highest numbers in the United States of America) and Africa for 4 percent (highest numbers in Nigeria). The pattern of regional distribution has not changed greatly since 2005. Asia has increased its share. The shares of Europe and the Caucasus and North America have fallen, with the former region experiencing an absolute fall in the size of its pig population. From a relatively low starting point, Africa's pig population has increased by 37 percent since 2005.

The world's chicken population reached more than 21 billion in 2012. More than half the total (53 percent) is found in Asia, where the largest producers are China and Indonesia. Latin America and the Caribbean accounts for 15 percent of the total (highest numbers in Brazil and Mexico); Europe and the Caucasus for 11 percent (highest numbers in the Russian Federation and Turkey); North America for 10 percent (highest numbers in the United States of America); Africa for 7 percent (highest numbers in Nigeria and South Africa) and the Near and Middle East for 3 percent (highest numbers in Saudi Arabia

and Egypt). Since 2005, the chicken population has increased in all regions except North America. Asia has increased its share of the total world population, while the shares of Europe and the Caucasus and North America have declined.

4 Breed diversity and distribution

This subsection discusses the geographical distribution of breeds belonging to the local and transboundary categories, presents a summary of the current risk status of the world's breeds and considers trends in breed risk status since the time the first SoW-AnGR was prepared.

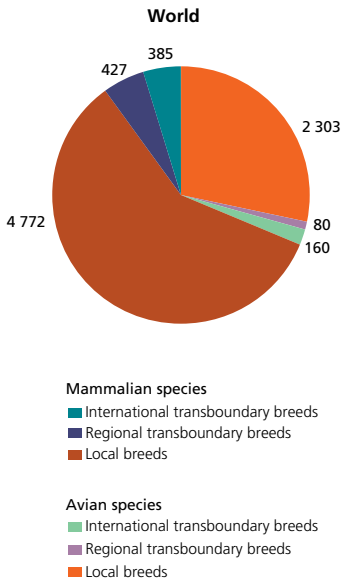
4.1 Geographical distribution of local and transboundary breeds

The Global Databank for Animal Genetic Resources currently contains data from 182 countries and 38 species. The total number of breeds recorded in the Global Databank increased from 7 616 in 2006 to 8 774 in 2014. Out of this total, 7 718 are local breeds (i.e. breeds present in only one country – see Box 1B2); the equivalent figure in 2006 was 6 536. The remaining 1 056 are transboundary breeds (i.e. breeds present in more than one country); the equivalent figure in 2006 was 1 080. Among transboundary breeds, 510 (compared to 523 in 2006) are regional transboundary breeds (occur in only one region) and 546 (compared to 557 in 2006) are international transboundary breeds (occur in more than one region). A total of 647 breeds (compared to 690 in 2006) are classified as extinct. Four of these extinct breeds (compared to nine in 2006) are transboundary breeds (three regional and one international).⁴

Figure 1B3 shows the share of local, regional transboundary and international transboundary breeds among the mammalian and avian breeds

⁴ The 2006 figures presented in this paragraph are taken from the first SoW-AnGR, i.e. they do not account for corrections that countries have made to their breed inventories in DAD-IS since 2006. For example, the apparent fall in the number of extinct breeds between 2006 and 2014 is caused by corrections of this kind.

FIGURE 1B3
Number of local and transboundary breeds at global level



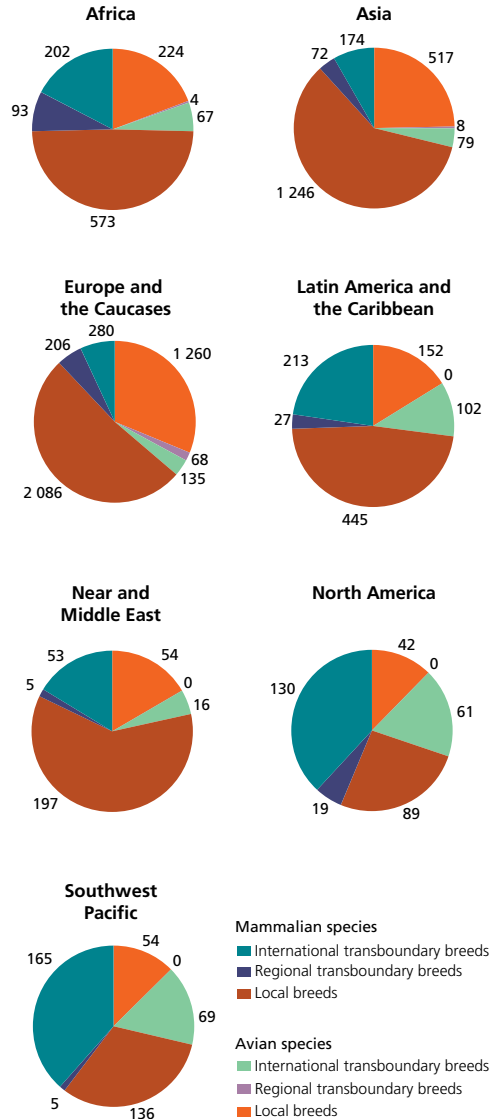
Source: DAD-IS (accessed July 2014).

of the world (excluding extinct breeds). The shares of the breed classes have remained more or less constant since 2006. Figure 1B4 presents a regional breakdown of the figures.

As in 2006, more than two-thirds of reported breeds belong to mammalian species. Mammalian breeds outnumber avian breeds in all regions of the world. The number of mammalian regional transboundary breeds is similar to the number of international transboundary breeds. In contrast, there are twice as many avian international transboundary breeds as there are avian regional transboundary breeds.

Tables 1B2 and 1B3, respectively, show the number of reported local breeds of mammalian and avian species in each region of the world. The totals in some categories have fallen since 2006 because of corrections made by some countries to their breed inventories recorded in DAD-IS.

FIGURE 1B4
Number of local and transboundary breeds at regional level



Source: DAD-IS (accessed July 2014).

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TABLE 1B2

Number of reported mammalian local breeds

Species	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific	World
Asses	20	39	50	24	16	5	3	157
Bactrian camels	0	9	3	0	0	0	0	12
Buffaloes	2	90	9	11	8	1	2	123
Cattle	176	241	369	141	43	17	32	1 019
Dromedaries	46	13	1	0	23	0	2	85
Goats	96	183	218	28	34	6	11	576
Guinea pigs	4	0	0	13	0	0	0	17
Horses	40	138	371	84	14	22	25	694
Pigs	53	214	188	60	1	12	15	543
Rabbits	11	16	186	18	5	0	0	236
Sheep	117	262	613	51	53	21	38	1 155
Yaks	0	25	2	0	0	1	0	28
Others	8	16	76	15	0	4	8	127
Total	573	1 246	2 086	445	197	89	136	4 772

Note: Figures exclude extinct breeds. Figures for alpacas, American bison, deer, dogs, dromedary × Bactrian camels, guanacos, llamas and vicuñas are combined in the “others” category.

Source: DAD-IS (accessed July 2014).

TABLE 1B3

Number of reported avian local breeds

Species	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific	World
Chickens	129	305	912	88	35	15	30	1 514
Ducks	15	92	107	22	4	1	12	253
Geese	10	44	119	5	2	0	2	182
Muscovy ducks	5	9	6	1	1	0	2	24
Ostriches	6	2	3	0	0	0	1	12
Partridges	2	8	2	0	0	0	0	12
Pheasants	0	7	5	6	0	0	0	18
Pigeons	7	12	35	7	8	1	2	72
Turkeys	11	11	40	11	3	11	5	92
Others	39	27	31	12	1	14	0	124
Total	224	517	1 260	152	54	42	54	2 303

Note: Figures exclude extinct breeds. Figures for cassowaries, Chilean tinamou, duck × Muscovy ducks, emus, guinea fowl, ñandus, peacocks, quails and swallows are combined in the “others” category.

Source: DAD-IS (accessed July 2014).

TABLE 1B4
Number of reported mammalian transboundary breeds

Species	Regional transboundary							International transboundary	World
	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific		
Asses	3	3	1	1	0	0	0	5	13
Bactrian camels	0	0	0	0	0	0	0	2	2
Buffaloes	0	9	1	1	0	0	0	4	15
Cattle	36	20	30	6	1	2	1	109	205
Deer	0	1	1	0	0	0	0	10	12
Dromedaries	1	1	0	0	0	0	0	2	4
Goats	16	12	14	2	0	5	1	36	86
Guinea pigs	0	0	0	1	0	0	0	0	1
Horses	7	10	36	4	0	4	0	63	124
Pigs	3	2	17	5	0	2	0	30	59
Rabbits	3	0	32	1	0	0	0	23	59
Sheep	24	14	74	3	4	6	3	99	227
South American camelids	0	0	0	3	0	0	0	2	5
Total	93	72	206	27	5	19	5	385	812

Note: Figures exclude extinct breeds.

Source: DAD-IS (accessed July 2014).

TABLE 1B5
Number of reported avian transboundary breeds

Species	Regional transboundary							International transboundary	World
	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific		
Cassowaries	0	0	0	0	0	0	0	1	1
Chickens	4	3	42	0	0	0	0	106	155
Ducks	0	2	12	0	0	0	0	12	26
Emus	0	0	0	0	0	0	0	1	1
Geese	0	2	7	0	0	0	0	14	23
Guinea fowl	0	0	0	0	0	0	0	5	5
Muscovy ducks	0	0	0	0	0	0	0	1	1
Ostriches	0	0	0	0	0	0	0	3	3
Pigeons	0	0	0	0	0	0	0	1	1
Quails	0	1	0	0	0	0	0	0	1
Turkeys	0	0	7	0	0	0	0	16	23
Total	4	8	68	0	0	0	0	160	240

Note: Figures exclude extinct breeds.

Source: DAD-IS (accessed July 2014).

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Tables 1B4 and 1B5, respectively, show the number of reported regional transboundary breeds of mammalian and avian species in each region of the world. The existence of significant numbers of regional transboundary breeds has implications for the use and conservation of AnGR, and highlights the need for cooperation at regional or subregional levels. For several mammalian species, including sheep, horses and pigs, Europe and the Caucasus, has the highest number of regional transboundary breeds. Africa has a relatively large share of regional transboundary breeds in most of the species listed and has more regional transboundary breeds of cattle and goats than any other region. Europe and the Caucasus has by far the highest number of regional transboundary breeds among avian species.

4.2 Breed risk status

As described in Box 1B1, since the publication of the first SoW-AnGR, the method for assigning breeds to risk-status categories has been amended by the introduction of a ten-year cut-off point, beyond which the risk status of a breed is considered to be unknown if no population data from more recent years have been reported. The results presented in this subsection are therefore not directly comparable to those presented in the first SoW-AnGR. Trends based on comparable figures from 2006 and 2014 are presented below (Subsection 4.3).

A total of 1 458 breeds (17 percent of all breeds, including those that are extinct) are classified as being at risk. The percentage of breeds classified as being of unknown risk status has increased from 34 percent in 2012 (as calculated for that year's status and trends report – FAO, 2013b) to 58 percent in 2014, mainly because of the above-mentioned new method of assigning risk status.

Box 1B3

Glossary: risk-status classification

Extinct: a breed in which there are no breeding males or breeding females remaining. Genetic material that would allow recreation of the breed may, however, have been cryoconserved. In reality, extinction may be realized well before the loss of the last animal or genetic material.

Critical: a breed in which the total number of breeding females is less than or equal to 100 or the total number of breeding males is less than or equal to five; or the overall population size is less than or equal to 120 and decreasing and the percentage of females being bred to males of the same breed is below 80 percent; and which is not classified as extinct.

Critical-maintained: a breed that meets the criteria for inclusion in the critical category, but for which active conservation programmes are in place or populations are maintained by commercial companies or research institutions.

Endangered: a breed in which the total number of breeding females is greater than 100 and less than or equal to 1 000 or the total number of breeding males is less than or equal to 20 and greater than 5; or the overall population size is greater than 80 and less than 100 and increasing and the percentage of females being bred to males of the same breed is above 80 percent; or the overall population size is greater than 1 000 and less than or equal to 1 200 and decreasing and the percentage of females being bred to males of the same breed is below 80 percent; and which is not classified as extinct, critical or critical-maintained.

Endangered-maintained: a breed that meets the criteria for inclusion in the endangered category, but for which active conservation programmes are in place or populations are maintained by commercial companies or research institutions.

At risk: a breed classified as either critical, critical-maintained, endangered or endangered-maintained.

Figure 1B5 shows that the proportion of mammalian breeds classified as at risk (16 percent) is lower than the proportion of avian breeds (19 percent). However, in absolute terms, the number of breeds at risk is higher among mammals (955 breeds) than among birds (503 breeds).

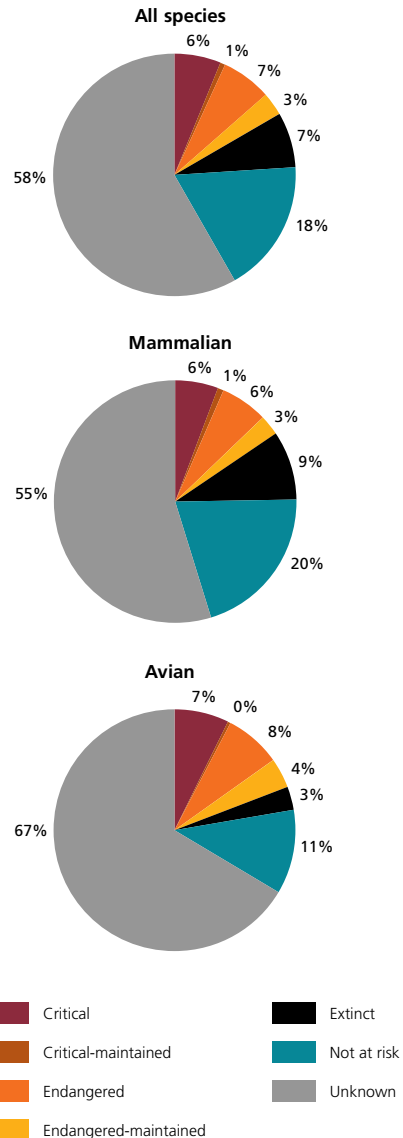
Figure 1B6 presents risk-status data for mammalian species. It can be seen that horses, sheep and cattle are the mammalian species with the highest number of breeds at risk. Rabbits (45 percent) followed by horses (22 percent) and asses (17 percent) are the species that have the highest proportions of breeds at risk. Figure 1B6 also shows the large number of breeds for which no risk-status data are available. The problem is particularly significant in some species – 93 percent for deer breeds, 66 percent for ass breeds and 98 percent for dromedary breeds. This lack of data is a serious constraint to effective prioritization and planning of breed conservation measures. Cattle are the species with the highest number of breeds (184) reported extinct. Large numbers of extinct breeds of sheep (160), pig (107) and horse (87) are also reported.

Among avian species, chickens have by far the highest number of breeds at risk (Figure 1B7). As in the case of mammals, there are a large number of avian breeds for which population figures are unavailable. Extinct breeds have mainly been reported among chickens. There are also a few reported cases among ducks, guinea fowl and turkeys.

The regions with the highest proportion of their breeds classified as at risk are Europe and the Caucasus (31 percent of mammalian breeds and 35 percent of avian breeds) and North America (16 percent of mammalian breeds). These are the regions that have the most highly specialized livestock industries, in which production is dominated by a small number of breeds. In absolute terms, Europe and the Caucasus has by far the highest number of at-risk breeds. Despite the apparent dominance of these two regions, problems in other regions may be obscured by the large number of breeds with unknown risk status (Figure 1B8).

The new method for calculating risk status (based on a ten-year cut-off point – see Box 1B1)

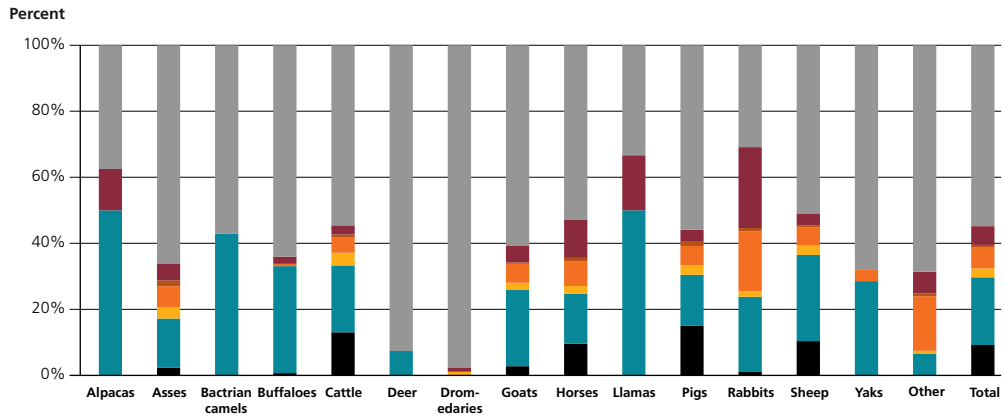
FIGURE 1B5
Proportion of the world's breeds by risk status category



Source: DAD-IS (accessed July 2014).

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FIGURE 1B6
Risk status of the world's mammalian breeds in June 2014 – species breakdown



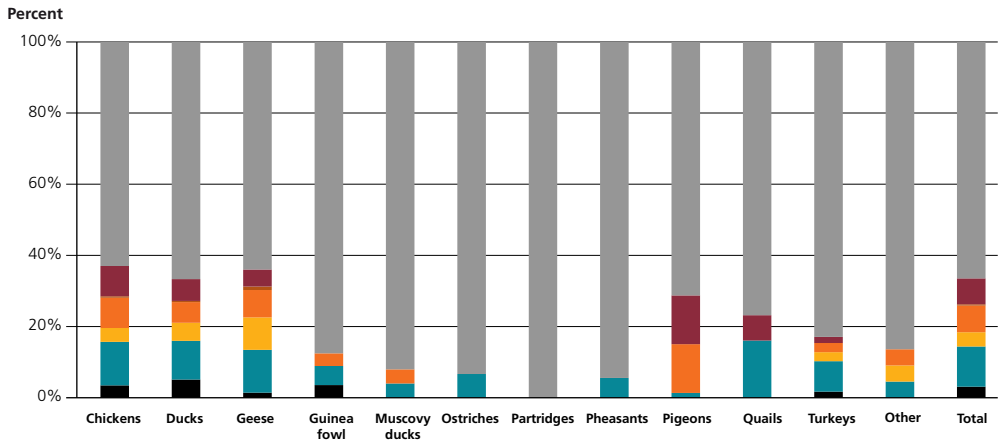
RISK STATUS

	Alpacas	Asses	Bactrian camels	Buffaloes	Cattle	Deer	Dromedaries	Goats	Horses	Llamas	Pigs	Rabbits	Sheep	Yaks	Other	Total
Unknown	3	115	8	89	768	25	87	414	479	2	396	92	788	19	83	3 368
Critical	1	9	0	3	39	0	1	34	104	1	26	73	53	0	8	352
Critical-maintained	0	3	0	0	11	0	0	3	10	0	9	3	9	0	1	49
Endangered	0	11	0	1	67	0	0	39	67	0	42	54	86	1	20	388
Endangered-maintained	0	6	0	0	54	0	1	15	21	0	20	5	43	0	1	166
Not at risk	4	26	6	45	285	2	0	157	137	3	109	68	403	8	8	1 261
Extinct	0	4	0	1	184	0	0	19	87	0	107	3	160	0	0	565
Total	8	174	14	139	1 408	27	89	681	905	6	709	298	1 542	28	121	6 149

Note: "Other" refers to Bactrian camel x dromedary crosses, guanacos, vicuñas, guinea pigs and dogs.

Source: DAD-IS (accessed July 2014).

FIGURE 1B7
Risk status of the world's avian breeds in June 2014 – species breakdown



RISK STATUS

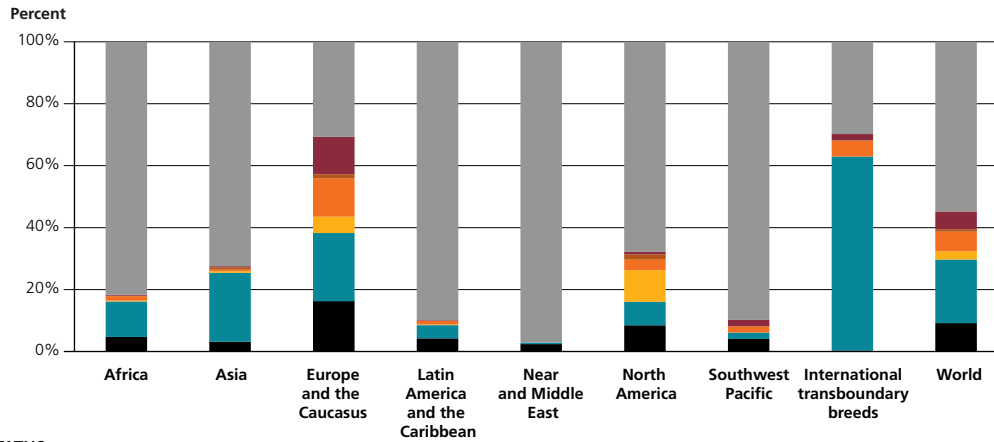
Unknown	1 089	196	133	49	23	14	12	17	52	43	97	19	1 744
Critical	147	18	10	0	0	0	0	0	10	4	2	0	191
Critical-maintained	7	1	2	0	0	0	0	0	0	0	0	0	10
Endangered	147	17	16	2	1	0	0	0	10	0	3	1	197
Endangered-maintained	67	15	19	0	0	0	0	0	0	0	3	1	105
Not at risk	212	32	25	3	1	1	0	1	1	9	10	1	296
Extinct	60	15	3	2	0	0	0	0	0	0	2	0	82
Total	1 729	294	208	56	25	15	12	18	73	56	117	22	2 625

Note: "Other" refers to duck x Muscovy duck crosses, Chilean tinamous, cassowaries, emus, ñandus, peacocks and swallows.
 Source: DAD-IS (accessed July 2014).

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FIGURE 1B8

Risk status of the world's mammalian breeds in June 2014 – regional breakdown



RISK STATUS

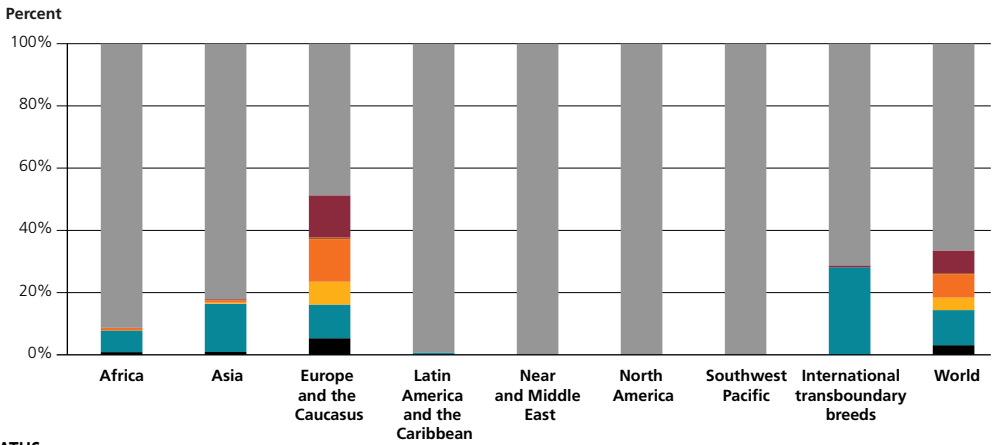
	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific	International transboundary breeds	World
Unknown	571	986	840	443	201	80	132	115	3 368
Critical	2	5	332	1	0	1	3	8	352
Critical-maintained	1	10	36	0	0	2	0	0	49
Endangered	10	7	338	6	0	4	3	20	388
Endangered-maintained	2	7	144	1	0	12	0	0	166
Not at risk	80	303	602	21	1	9	3	242	1 261
Extinct	33	43	446	21	5	10	6	1*	565
Total	699	1 361	2 738	493	207	118	147	386	6 149

Note: The figures for each region include local breeds and regional transboundary breeds. International transboundary breeds (breeds present in more than one region) are listed separately.

*African Aurochs, which once lived in parts of both the Africa and the Near and Middle East regions.

Source: DAD-IS (accessed July 2014).

FIGURE 1B9
Risk status of the world's avian breeds June 2014 – regional breakdown



RISK STATUS

Unknown	210	435	684	151	54	42	54	114	1 744
Critical	0	1	189	0	0	0	0	1	191
Critical-maintained	0	1	9	0	0	0	0	0	10
Endangered	2	4	191	0	0	0	0	0	197
Endangered-maintained	0	2	103	0	0	0	0	0	105
Not at risk	16	82	152	1	0	0	0	45	296
Extinct	2	5	75	0	0	0	0	0	82
Total	230	530	1 403	152	54	42	54	160	2 625

Note: The figures for each region include local breeds and regional transboundary breeds. International transboundary breeds (breeds present in more than one region) are listed separately.

Source: DAD-IS (accessed July 2014).

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draws attention to the fact that during the ten years up to June 2014 countries from Latin America and the Caribbean, the Near and Middle East, North America and the Southwest Pacific reported almost no population data for any avian breeds. Almost all the avian breeds from these regions are therefore classified as being of unknown risk status. Likewise, for more than

90 percent of Africa's avian breeds and more than 80 percent of Asia's avian breeds, lack of recent population data means that no risk status can be assigned (Figure 1B9).

Tables 1B6 and 1B7 show the number of extinct mammalian and avian breeds, broken down by species and region. Europe and the Caucasus has reported far more extinct mammalian and avian

TABLE 1B6

Number of extinct mammalian breeds reported

Species	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific	International transboundary	World
Asses	1	0	2	0	1	0	0	0	4
Buffaloes	0	0	1	0	0	0	0	0	1
Cattle	20	19	120	20	1	1	2	1	184
Goats	1	2	16	0	0	0	0	0	19
Horses	6	1	71	0	0	8	1	0	87
Pigs	0	15	90	1	0	0	1	0	107
Rabbits	0	0	1	0	2	0	0	0	3
Sheep	5	6	145	0	1	1	2	0	160
Total	33	43	446	21	5	10	6	1	565

Note: The figures for each region include local breeds and regional transboundary breeds. International transboundary breeds (breeds present in more than one region) are listed separately.

Source: DAD-IS (accessed July 2014).

TABLE 1B7

Number of extinct avian breeds reported

Species	Africa	Asia	Europe and the Caucasus	Latin America and the Caribbean	Near and Middle East	North America	Southwest Pacific	World
Chickens	0	5	55	0	0	0	0	60
Ducks	0	0	15	0	0	0	0	15
Geese	0	0	3	0	0	0	0	3
Guinea fowl	2	0	0	0	0	0	0	2
Turkeys	0	0	2	0	0	0	0	2
Total	2	5	75	0	0	0	0	82

Note: No extinct avian international transboundary breeds have been reported.

Source: DAD-IS (accessed July 2014).

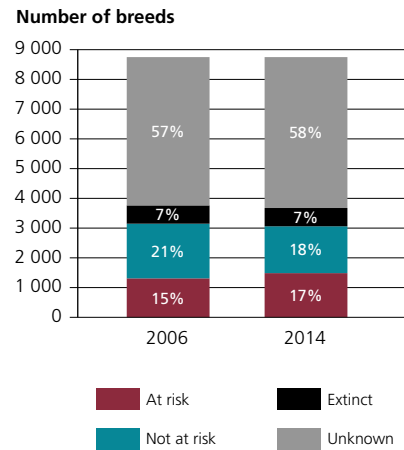
breeds than any other region – 7 percent of all breeds reported from this region are extinct. The dominance of Europe and the Caucasus in terms of the number of breeds reported extinct may relate, at least in part, to the relatively advanced state of breed inventory and monitoring in this region. The year of extinction has been reported for only 33 percent of extinct breeds (214). Seven breeds are reported to have become extinct before 1900, 111 between 1900 and 1999, 66 between 2000 and 2005, and 30 after 2005 (Table 1B8).

4.3 Trends

Previous attempts to summarize global trends in breed risk status have been affected by the confounding effects of ongoing corrections to breed inventories. To counter this problem, the trends in breed risk status presented in this report are calculated based on the most up-to-date current and historical data available in DAD-IS at the time of calculation, rather than by comparing current data to those presented in older reports (see Box 1B1). Figure 1B10 shows trends in breed risk status between 2006 (when the first SoW-AnGR was drafted) and 2014. The proportion of breeds classified as at risk increased from 15 percent to 17 percent; the proportion of breeds classified as not at risk decreased from 21 percent to 18 percent and the proportion of breeds reported to be extinct remained stable at 7 percent. The

FIGURE 1B10

Changes in breed risk status between 2006 and 2014



Source: DAD-IS (accessed July 2014).

number of breeds for which no risk status can be calculated, either because of a complete lack of data on their population sizes or because no population data are recorded for the preceding ten years, remains very high – 58 percent in 2014 compared to 57 percent in 2006. In short, the available data indicate that genetic erosion has continued over the 2006 to 2014 period, with the proportion of breeds falling into the at-risk category increasing, relative both to the total number of recorded breeds and to the number for which population data are available. However, the full picture of the status and trends of breed risk remains to a large degree obscured by gaps in current and historical data on breed population sizes.

TABLE 1B8

Breed extinction over time

Period	Number of breeds	%
Unspecified	433	67
Before 1900	7	1
1900–1999	111	17
2000–2005	66	10
After 2005	30	5
Total	647	100

Source: DAD-IS (accessed July 2014).

5 Conclusions

Since the time the first SoW-AnGR was prepared, the number of national breed populations recorded in the Global Databank for Animal Genetic Resources has increased. However, breed-related information remains far from complete. For almost two-thirds of all reported breeds, risk status is unknown because

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of a lack of population data. The problem is particularly marked in some regions. For example, in Africa, more than 80 percent of breed populations have no recorded population data for any of the last ten years. In the Southwest Pacific, the equivalent figure is 90 percent.

As a result of the introduction of the ten-year cut-off point after which breeds revert to the “unknown” risk-status category, the percentage of breeds with unknown risk status has increased significantly relative to the figures presented in the first SoW-AnGR. Because of this new calculation method, direct comparisons with the risk-status figures presented in the first SoW-AnGR are not possible. However, trends based on comparable figures – calculated using the most up to date current and historical data available in the Global Databank – indicate that erosion is ongoing.

Missing population data remains the biggest weakness of the current monitoring system, along with the non-coverage of cross-bred populations, which represent a large part of livestock populations worldwide. To arrive at a more comprehensive picture, all livestock populations, regardless of their level of cross-breeding, need to be included within one consistent monitoring system.

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