



FAO takes a close look at the pig Sector in Eastern Europe to better understand the threats of African Swine fever

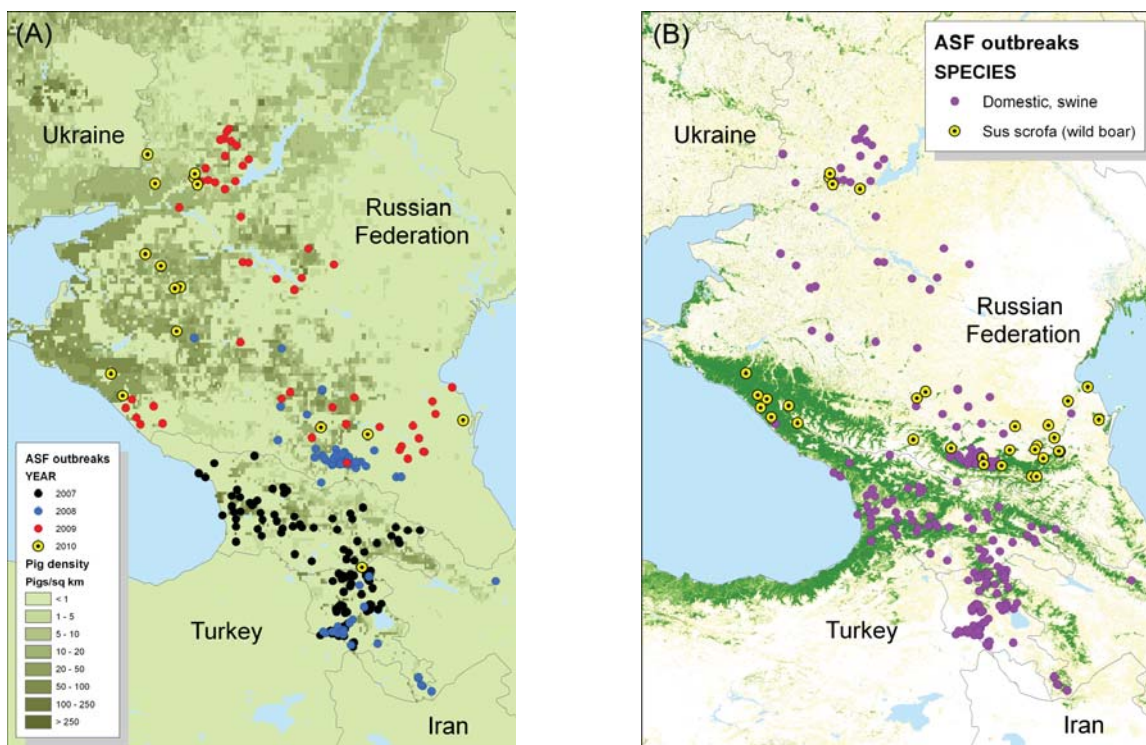
1. INTRODUCCION

In addition to the recent European Food Safety Agency (EFSA) scientific assessment on African swine fever (ASF) risk in Europe, March 2010^[1], FAO has undertaken complementary analyses to explore general patterns in the distribution of pigs and swine production systems in Eastern Europe, and the distribution of wild boar. This publication aims further to advance the EFSA report by providing information addressing aspects of ASF risk outside the European Union. Earlier indications obtained from ASF dynamics in the countries of the Caucasus Region^[2] and southern parts of the Russian Federation^[3] suggest that in areas where smallholder pig production is common, ASF spreads progressively, also occasionally infecting wild boar populations (see Fig. 1 A and B). This spread can occur very rapidly as shown in the southern Caucasus region.

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Figure 1. Progressive spread of ASF in the Caucasus and Russian Federation from 2007 to 2010



(A) by year, with total pig population density as a background; (B) by species affected, with forest cover as a background

Note: Data: ASF outbreaks: OIE, EMPRES-i database, Anshba, 2008; pig densities

[Gridded Livestock of the World: <http://www.fao.org/ag/againfo/resources/en/glw/home.html>].

Outbreaks in Orenburg and Leningrad Oblasts in Russian Federation are not shown on the map

2. PIG PRODUCTION SYSTEM AND DISTRIBUTION

A critical question is how ASF may find its way to the non-infected countries in Eastern Europe or even Asia (Fig. 2). So far, mostly backyard pig production systems have been affected (80 percent of outbreaks). Smallholder pigs roam outside their holdings in search of feed during much of the year. This may have facilitated ASF's gradual geographic spread. The transportation of contaminated pig meat products (combined with swill-feeding) has also been shown to be critically important: in the Russian Federation, the detection of ASF virus in Orenburg Oblast (not far from Kazakhstan) in July 2008, and in Leningrad Oblast (close to Estonia and Finland) in October 2009, clearly demonstrate how transportation of pig meat can facilitate long distance dispersal of ASF and dramatically alter the dynamics of disease spread. Also, short range spread of ASF virus in commercial meat products has been implicated in the propagation of disease on the regional scale (Vlasov, 2009). It may be expected that with ASF becoming established more widely in southern parts of the Russian Federation, and possibly beyond, with involvement of commercial pig production chains supplying urban centres, ASF virus dispersal by people carrying pig meat products will increase in importance. In addition, although not fully understood, the potential role of wild boar must be considered in the maintenance and spread of the virus, particularly in areas where both free-range, backyard pigs and wild boar abound. There are concerns that under temperate winter conditions ASF virus may be able to survive in the environment because of improper disposal of ASF-infected domestic swine carcasses, which can be then scavenged by wild boars. Such a mechanism could also facilitate virus overwintering in the local populations of wild boar, because of cannibalistic scavenging, particularly characteristic for the species during cold part of the year when their preferred food is scarce. Finally, the spread of ASF virus through the transport of live pigs within and between countries may be growing in importance. Several commercial pig farms in the Russian Federation have already been affected.

There are important pig production areas along the border between the Russian Federation and Ukraine (see Fig. 3). The risk of introduction of ASF into eastern Ukraine appears to be high. With relatively high human population densities, intensive movement of people and pig meat products inside the country, and a high density of commercial pig production plants in the central part of Ukraine, Kiev City in particular, ASF may spread across Ukraine in westerly direction. The capital may act as a magnet for ASF encroachment.

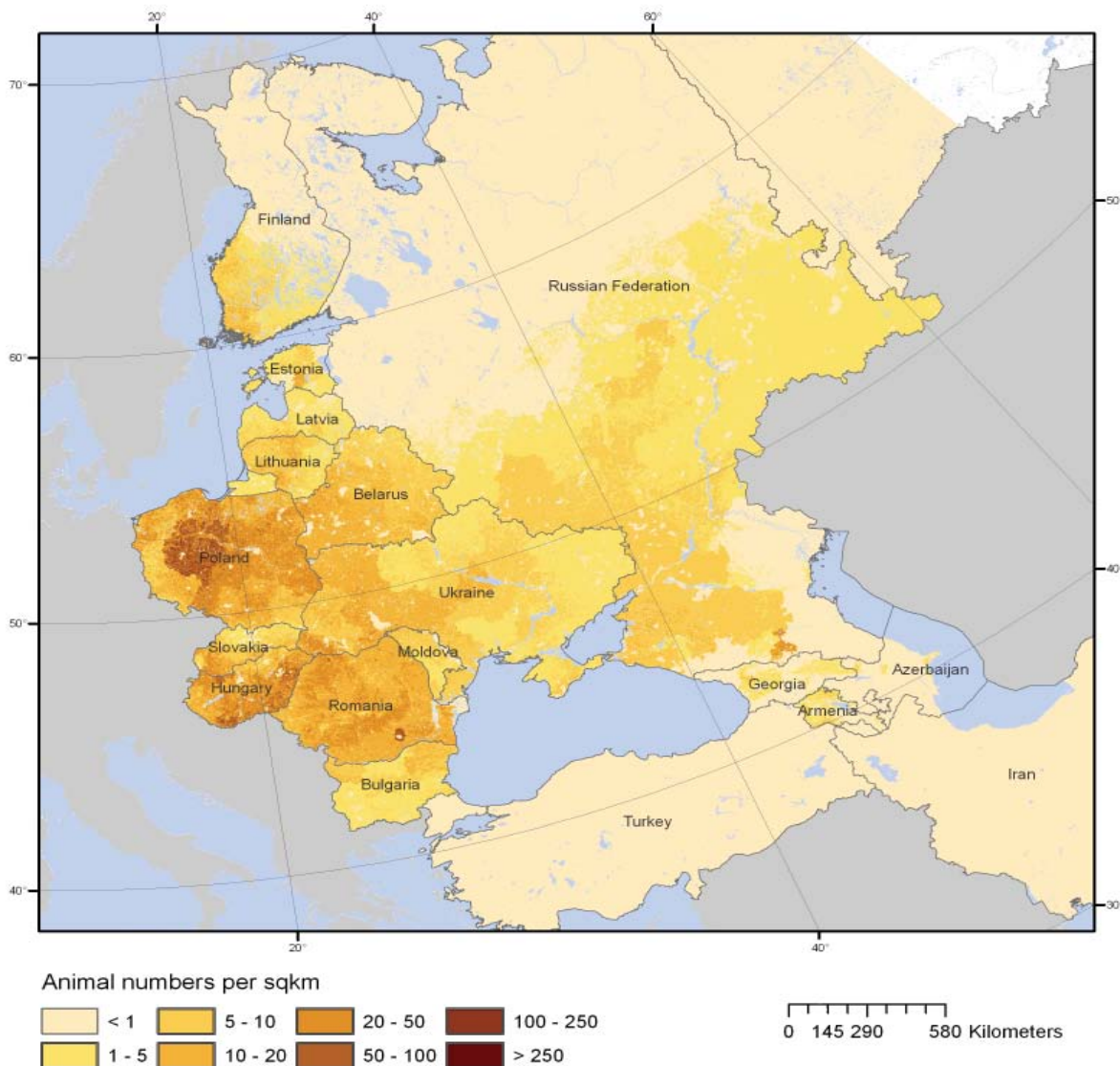
If ASF were to take a hold in the central part of Ukraine, this may pave the way for virus spread yet further to the west (Fig. 4); initially into Poland, Slovakia, Hungary and Romania. Conditions in the western part of Ukraine are particularly favourable for small-scale free-range pig production. The fast propagation of ASF virus in this type of environment has been observed for some

years now in the countries of the Caucasus Region and the southern part of the Russian Federation. From these observations it would seem likely that should ASF be introduced into western Ukraine it would be very difficult to halt the progressive spread of the virus westwards. The continuous distribution of backyard pig producers along the borders between Ukraine, Belarus and Moldova, on the eastern side, and Poland, Slovakia, Hungary and Romania on the western side (Fig. 2 to 4) provides ideal conditions for the persistence and spread of the virus in this region. Commercial pig production plants are more prominent in the central-northern part of the Ukraine and their distribution extends into Belarus and the Baltic countries, where there is considerable overlap between commercial pig holdings, free-range domestic pigs and wild boar (Figs 4 and 6).

Whilst it is very difficult to forecast the locations and routes of introduction and subsequent spread, there is nevertheless a number of general risk factors that may inform ASF preparedness strategies. An understanding of the more likely ASF risk scenarios is important because different actions will need to be taken to a) prevent introduction, b) initiate rapid response upon detection, or c) halt progressive spread. The current ASF epidemiological situation, with recent outbreaks in the Rostov Oblast of the Russian Federation, in the immediate proximity to Ukrainian border, highlights the need for certain preventive measures to be taken:

- 1) Surveillance (active and passive) in backyard pigs and wild boar distributed near infected areas and in pig holdings in other targeted, high-risk areas, such as around harbours or airports, or in areas with high pig densities;
- 2) Increased control (inspection, quarantines) at border crossing points to intercept transport of live pigs, food items and other materials potentially containing infected pig meat or products. The OIE Terrestrial Animal Health Code^[4] (2009 edition) provides guidelines for the safe importation of domestic and wild pigs, pork and pork products, pig semen, embryos and ova and other products incorporating pig tissues, such as pharmaceuticals. Where International agreements or Unions lead to the abolishment of border controls (e.g. the Customs Union currently involving Russian Federation, Belarus and Kazakhstan) each signatory country must ensure and demonstrate the capacity to effectively exclude infected areas from live animals or animal products trade.
- 3) Awareness campaigns, particularly targeting rural communities, to inform people how to recognize ASF, and to know what action should be taken and reporting should be made in the event of suspected ASF cases. Also, forest workers, game wardens, staff of the nature protected areas, and wild boar hunters should be instructed on reporting any sick and/or dead wild boar encountered.
- 4) Particularly in and around infected areas, it is advisable to place a ban on swill-feeding, although

Figure 2. Modelled pig distribution in the countries of Eastern Europe

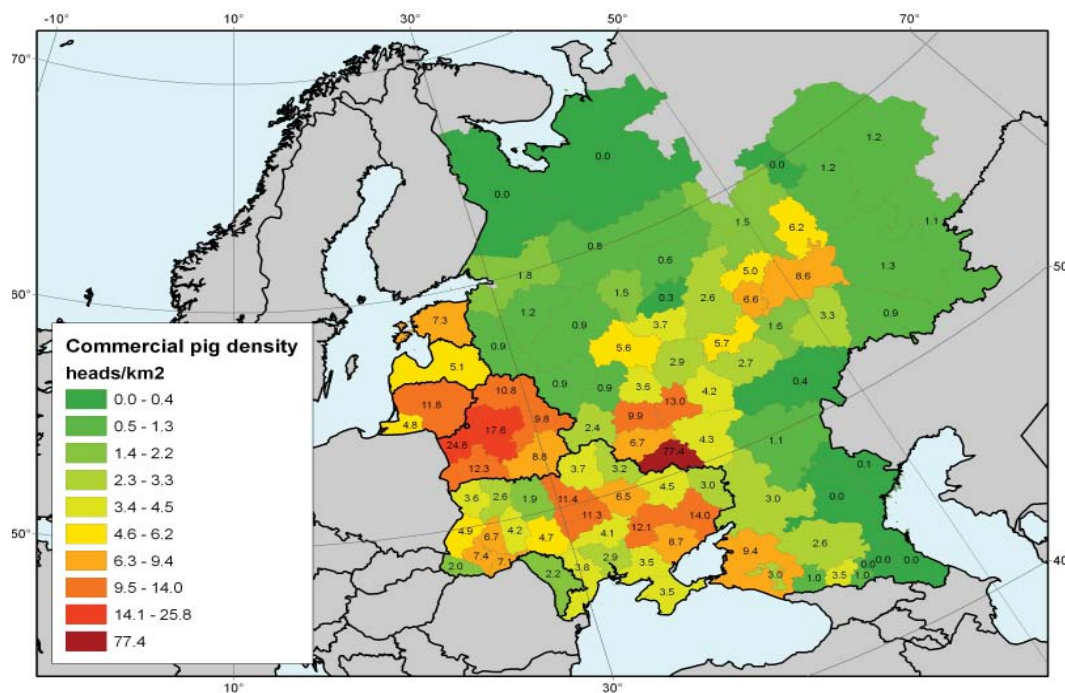


Adjusted to fit most recent population estimates for the European part of the Russian Federation (2010), Ukraine (2010) and Belarus (2008) available at the first administrative level (oblast); and Moldova (2009), Lithuania (2007), Estonia (2007) and Latvia (2008) available at the national level (official statistical data, sources are listed in the reference section).
 Data for other countries is according to FAOSTAT.

compliance at household level is rather unlikely. In any case, pigs should not be fed swill that might contain remains of pigs. If swill is used it should be boiled at least for 30 minutes, although boiling for 1 hour is generally recommended to kill other pathogens to which swine might be susceptible (FAO, 2010).

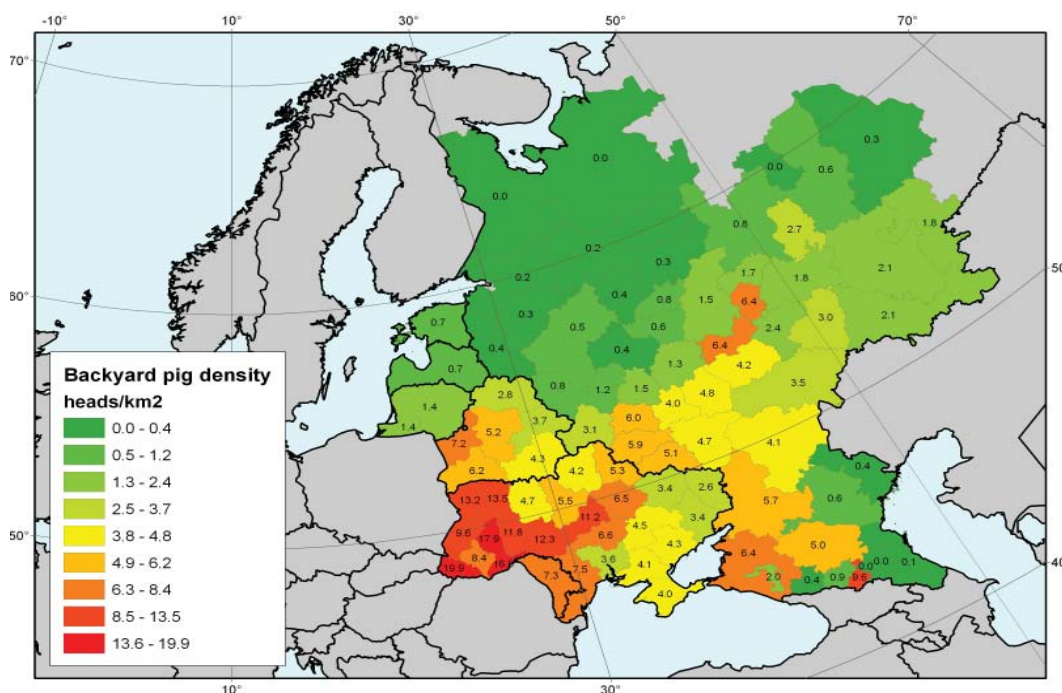
5) Containment of pigs in the form of properly constructed pig pens should be encouraged to reduce the numbers of free-ranging pigs entering into contact with feral pig populations or wild boar, particularly in areas considered to be at high risk. Additional biosecurity measures, such as the control of visitors and disinfection of equipment, also apply.

Figure 3. Densities of pigs in commercial holdings in the European part of the Russian Federation (2010), Ukraine (2010) and Belarus (2008) at the first administrative level (oblast); and Moldova (2009), Lithuania (2007), Estonia (2007) and Latvia (2008) at the national level



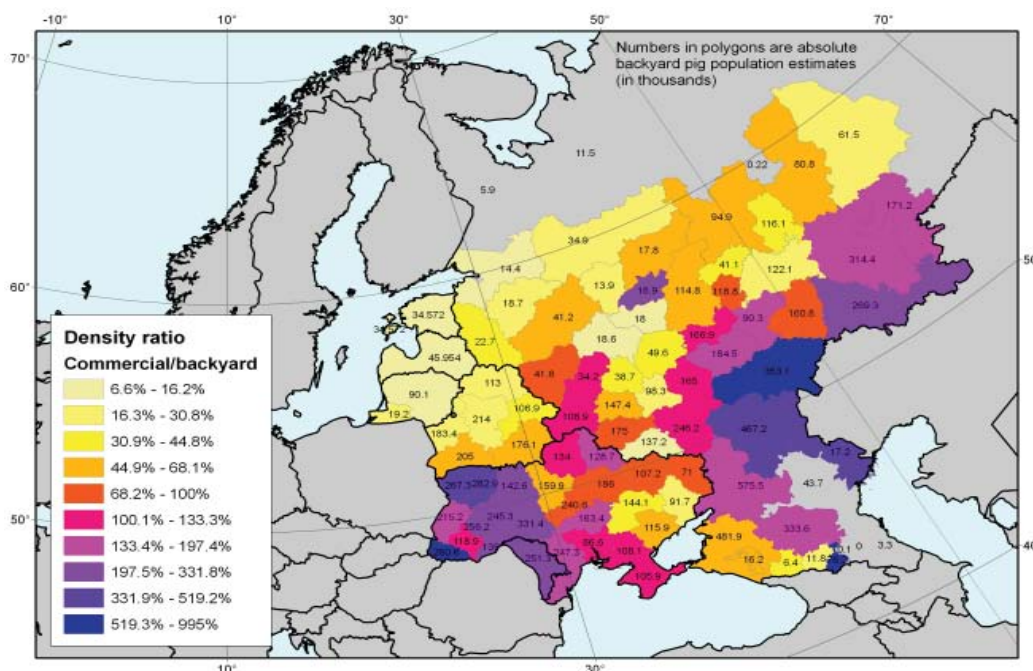
Note: official statistical data, sources are listed in the reference section

Figure 4. Densities of pigs in backyard holdings in the European part of the Russian Federation (2006), Ukraine (2010) and Belarus (2008) at the first administrative level (oblast); and Moldova (2009), Lithuania (2007), Estonia (2007) and Latvia (2008) at the national level



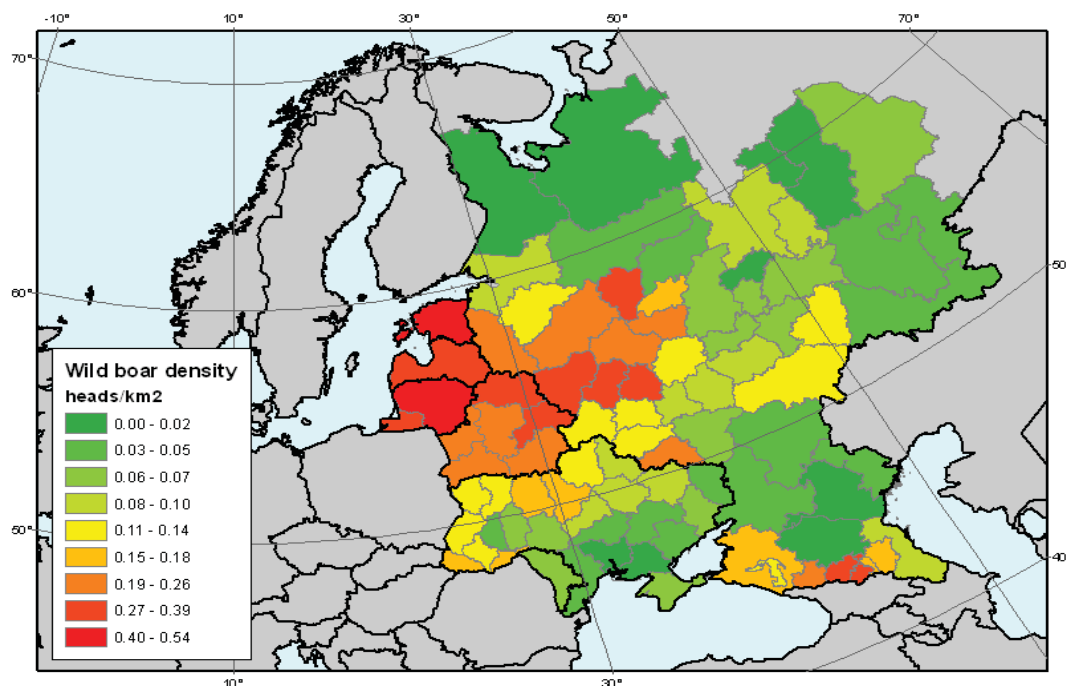
Note: official statistical data, sources are listed in the reference section

Figure 5. Ratio of pig density kept in commercial holdings to the density of those that are kept in backyard holding in the European part of the Russian Federation (2010, 2006), Ukraine (2010) and Belarus (2008) at the first administrative level (oblast); and Moldova (2009), Lithuania (2007), Estonia (2007) and Latvia (2008) at the national level



Note: official statistical data, sources are listed in the reference section). Figures in polygons refer to absolute backyard pig population estimates (in thousands)

Figure 6. Densities of wild boar in the European part of the Russian Federation (2010, 2006), Ukraine (2010) and Belarus (2008) at the first administrative level (oblast); and Moldova (2009), Lithuania (2007), Estonia (2007) and Latvia (2008) at the national level



Note: official statistical data, sources are listed in the reference section

3. REFERENCES

- Anshba E. A. 2008. *Africa Swine Fever in the Republic of Abkhazia*. Veterinariya Kybani No. 5. 10-11 pp.
- EFSA. 2010. *Scientific Opinion on African Swine Fever* [available at www.efsa.europa.eu/en/scdocs/scdoc/1556.htm]^[1]
- FAO. 2008. *African swine fever in the Caucasus*. EMPRES WATCH. Rome [available at <ftp://ftp.fao.org/docrep/fao/011/aj214e/aj214e00.pdf>]^[2]
- FAO. 2009. *African swine fever spread in the Russian Federation and the risk for the region*. EMPRES Watch. Rome [available at <ftp://ftp.fao.org/docrep/fao/012/ak718e/ak718e00.pdf>]^[3]
- FAO/OIE/World Bank. 2010. *Good practices for biosecurity in the pig sector – Issues and options in developing and transition countries*. FAO Animal Production and Health Paper No. 169. Rome [available at www.fao.org/docrep/012/i1435e/i1435e00.pdf]
- OIE. OIE Terrestrial Animal Health Code. 2009 [available at www.oie.int/eng/Normes/mcode/en_sommaire.htm]^[4]
- Vlasov N. A. 2009. *About development of ASF epizootic situation in Russian Federation*. PowerPoint presentation [available at www.fsvps.ru/fsvps-docs/ru/iac/2009/files/iac_asf.pdf]

4. SOURCES OF PIG POPULATION STATISTICS

Russian Federation

Backyard holdings: Results of All-Russian Agricultural Census in 2006. In 9 volumes/Federal State Statistical Service. Vol. 5.: Livestock Population: Book 1: Livestock Population Structure. – 447 p.: incl. diagrams. M.: IITS "Statistika Rossii", 2008. (In Russian) available at www.gks.ru/news/perepis2006/T5/tab_t5k1.pdf

Commercial holdings: Official data of the Federal State Statistical Service for 2010 available at www.gks.ru/wps/portal/OSI_P/SEL

Ukraine

Backyard and commercial holdings: Official statistics of the MoA available at www.minagro.kiev.ua/stat/tvar/viewstat.php3?statid=6

Belarus

Backyard and commercial holdings: Official Statistics of the MoA, provided by FAO National Focal Point

Moldova

Backyard and commercial holdings: Socio-economical situation in the Republic of Moldova in January-July 2009. National Bureau of Statistics. – 60 p. (In Russian) available at www.statistica.md/public/files/publicatii_electronice/Raport_trimestrial_rus/raport_II_2009_rus.pdf

Lithuania

Backyard and commercial holdings: Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania). Database on Animal Production in 2007 available at www.stat.gov.lt/en/

Latvia

Backyard and commercial holdings. Central Statistical Bureau of the Republic of Latvia. Database on the Structure of Agricultural Farms in 2007 available at www.csb.gov.lv/?lng=en

Estonia

Backyard and commercial holdings. Statistics Estonia. Statistical Database on Livestock Farming available at <http://pub.stat.ee/px-web.2001/dialog/statfile1.asp>

5. SOURCES OF WILD BOAR POPULATION STATISTICS

Russian Federation

- <http://admin.smolensk.ru/~zhivmir/images/otchet/sostzm.doc>
- <http://brakonyerov.net/forum/42-690-11>
- <http://enc.permkultura.ru/showObject.do?object=1803844362>
- http://gov.cap.ru/list4/news/rec.aspx?gov_id=4&link=&preurl=&FKey=F_JURL_ID&id=671202
- <http://gusevhunting.ru/articles.php?id=2357>
- <http://ojm.tatar.ru/rus/info.php?id=140081>
- <http://old.de.msu.ru/~vart/hunt/index.htm>
- http://piterhunt.ru/news/2009/10/22/kabany_zakhvaty-vayut_lenoblast.htm
- <http://protown.ru/russia/obl/articles/3852.html>
- <http://protown.ru/russia/obl/articles/4209.html>
- <http://rshn-tver.ru/about/psobl/>
- <http://rshn-tver.ru/about/tvobl/>
- <http://tass-ural.ru/presscentre/91413.html>
- http://welcome-karelia.ru/Hunter/Glava_2/Kaban_Sus-scrofa_L
- <http://www.adm.yar.ru/animal/doc/hant.doc>
- <http://www.belregion.ru/file/links/tchislennost2009.doc>
- <http://www.dvinaland.ru/power/departments/uprzm/8277/>
- http://www.fsvps.ru/fsvps-docs/ru/iac/publications/iac_public1.pdf
- http://www.fsvps.ru/fsvps-docs/ru/iac/publications/iac_public9.pdf
- <http://www.ivanovoobl.ru/materials.aspx?part=204>
- [http://www.mid.ru/ns-dipecon.nsf/af4d68f5d1bb4537-c32575eb00296dd1/ad2330d0637f356fc32575f40037b7c6/\\$FILE/%D0%9F%D0%B5%D0%BD%D0%B7%D0%B5%D0%BD%D1%81%D0%BA%D0%B0%D1%8F%20%D0%BE%D0%B1%D0%BB%D0%B0%D1%81%D1%82%D1%8C.doc](http://www.mid.ru/ns-dipecon.nsf/af4d68f5d1bb4537-c32575eb00296dd1/ad2330d0637f356fc32575f40037b7c6/$FILE/%D0%9F%D0%B5%D0%BD%D0%B7%D0%B5%D0%BD%D1%81%D0%BA%D0%B0%D1%8F%20%D0%BE%D0%B1%D0%BB%D0%B0%D1%81%D1%82%D1%8C.doc)
- <http://www.mprrb.ru/MPR2/AnimalAndFishWorld/Animal/200906081653.htm>
- <http://www.prirodnadzor.kaluga.ru/gmir.htm>
- <http://www.rsn-chel.ru/main.php?id=news/090209>
- http://www.vestnik.adygnet.ru/files/2006.2/298/hasanova2006_2.pdf
- <http://www.viptrophy.com/articles/1231>

Ukraine

- <http://biomon.org/cadastre/2tp-hunting/sus-scrofa/>

Moldova

- <http://enrin.grida.no/biodiv/ru/national/moldova/biores.htm>

Estonia

- <http://www.vm.ee/?q=en/node/8637>

Latvia

- http://www.li.lv/index.php?Itemid=1148&id=81&option=com_content&task=view

Lithuania

- http://www.kirj.ee/public/Ecology/2009/issue_3/ecol-2009-3-157-168.pdf