



Stocli breed and its taxonomic status: *Sus domesticus* or *Sus scrofa*?

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Abstract. The present paper discusses the taxonomic status of the Stocli pig, the oldest Romanian pig breed, considering “the evolutionary species concept”, the paleontological context, and the morphological criteria. Considering anatomical elements like bones morphology (length of the third molar, humerus), there are undisputable differences. History and archeological evidences based on recovered bones from the archaeological landfills, as well as information from chronicles and chrisoaves, revealed that delimitation between the identified domestic and a wild pig population was a very difficult because the domestic breed seems to be the breed Stocli, breed very similar to the wild boar. The difficulties of establishing the Stocli breed taxonomic membership has been aggravated by the fact that the Stocli pigs due to their harsh nature, were kept freely, without shelter, where they get their own food for months, and in this case, wild boar crossings often occurred. Hybrids between the wild boar and domestic pigs were reported on other continents even today. Although literature treats formally the Stocli pig as a domestic breed, it is difficult to determine whether the breed belongs to the wild species or to domestic form without molecular evidences. However, the Stocli breed is a reservoir of ancestral genes for the future of genetic improvement in swine breeds.

Key Words: old pig breed, swine, morphology, evolutionary species concept, paleontology.

Introduction. The domestic pig is most often considered to be a subspecies of the wild boar, which was given the name *Sus scrofa* by the first taxonomist Carl Linnaeus (1758). According to this, the formal name of the domestic pig would be *Sus scrofa domesticus* (Gentry et al 2004). However, in 1777, another pioneer of taxonomy, Johann Christian Polycarp Erxleben classified the domestic pig as a separate species from the wild boar (*Sus scrofa*). He gave it the name *Sus domesticus*, and according to “the evolutionary species concept” this name is used by many taxonomists of today (Wilson & Reeder 2005).

“The evolutionary species concept” (Simpson 1961; Wiley & Mayden 2000; Kottelat & Freyhof 2007; Nowak et al 2009) considers that subspecies are not valid taxa. Subspecies have disappeared from the nomenclature, being raised at species level, either lowered at variety or breed level. “The evolutionary species concept” was suggested by Simpson (1961) (and reconsidered by Wiley 1978) to adapt the concept of biological species to the paleontological context: a species is an evolutionary line (a sequence of ancestor and descendant populations) which evolves separately from other lines, having its own evolutionary roles and unitary trends (Stoian et al 2018).

Taxonomy based on pig remnants. For archaeozoologists, the separation of pig (*Sus domesticus*) bones from those of wild boar (*Sus scrofa*) is quite difficult because there are no clear morphological criteria for this discrimination (Stanc et al 2017). The separation of the two forms is made on dimensional criteria and on a smaller extent on bones morphology. The most numerous measurable cranial remains are the mandible fragments. For this anatomical element, length of the third molar is the most common

criterion used. The variation limits for the length of the third molar are 28-34 mm (pig) and 41-51 mm (wild boar) respectively (Stanc et al 2017). A clear distinction between the two species is obvious when considering the humerus, the breadth of the distal part varying between 30 mm and 40 mm for the domestic pig, and 50 mm and 70 mm for the wild boar (Stanc et al 2017).

Taxonomy based on living animals. This part of the taxonomy can be easier in the case of Suidae due to the fact we can evaluate animal morphology.

Ancient pigs. Among the oldest known primitive pigs are: the Chinese pig with mask (with an age of about 5,000 years), the Siamese pig, the Celtic pig, the Palatin pig and the Stocli pig (Botha et al 2016). In Romania, the most rustic breeds are Stocli, Mangalitsa and Bazna (Botha et al 2014, 2016; Oroian & Petrescu-Mag 2014; Rusu et al 2016).

Stocli breed is the oldest pig breed known in Romania (Figura 1). It has short and straight ears. Two varieties are distinguished: mountain variety and băltăreț variety. This breed resembles on a large extent the European wild boar. The Stocli breed stood at the base of White of Rușețu and Black of Strei breeds creation (www.gazetadeagricultura.info).

The upper body of Stocli pigs is convex, the croup is tapering, slightly developed, and the ham is thin and poor in the muscles. The head is large and long. The legs are long, not too thick but strong. Nails are strong, tough and small. The skin is thick, gray in color. The hair is abundant, harsh, and it forms ridge. The color is brown, like wild boar, of different nuances (www.gazetadeagricultura.info).

At 2 years, the sows reach 145 kg. Prolificacy is estimated at 6.25 piglets. Stocli sows exhibits pronounced maternal instincts (www.gazetadeagricultura.info).



Figure 1. A rare specimen of Stocli pig (Source: https://adevarul.ro/moldova/actualitate/cum-aratau-porcii-moldova-medievala-cata-carne-dadeau1_54ff210e448e03c0fd6da3b3/index.html).

How the pigs in Medieval Moldavia looked like and how much meat they gave.

While Stocli is a rare breed (west of the Apuseni Mountains, the Vrancea region, Măcin and Bălțile Brăilei (Romania)), the best way to analyze its morphology is to call on the knowledge of history and archeology (Damian 2015).

The history of the domestic pig from the Middle Ages was reconstituted on the basis of the recovered bones from the archaeological landfills, as well as information from chronicles and chrisoaves (Bejenaru et al 2014). Although the researchers identify in their studies a domestic and a wild pig population, the delimitation between them was a very difficult one, which can be explained by the fact that the domestic breed seems to be the breed Stocli, breed very similar to the wild boar.

In medieval Moldova, the domestic swine had a mandibular symphysis with a length varying, averaging 56.33 mm at Baia, 54.66 mm at Siret and 62.4 mm at Orheiul Vechi. The minimum of this dimension, 48 mm, was recorded at Baia, and the maximum, 69 mm, at Orheiul Vechi, the latter being able to support the hypothesis of crossing between the two forms of pigs (Bejenaru et al 2014).

The width of the withers was assessed with a general average of 764 mm, higher at Orheiul Vechi (an average of 782 mm) than in the settlements in Suceava Plateau (756 mm at Baia and Siret). Larger body parameters (around 800 mm) recorded in all the studied settlements can be attributed to the wild boar mating (Bejenaru et al 2014).

As some documents mention, Stocli breed is well suited to extensive exploitation, specific to the Middle Ages, in regions where it has grown in large numbers. It can be easily maintained in pasture, mountainous areas, and other areas plenty of acorns, beech nuts and other forest fruits (see Bejenaru et al 2014 and citation therein).

Current zootechnical data indicate an intense breeding delay, the optimal weight gain for exploitation being realized only after the age of two or three years. Pigs of the Stocli breed can live freely, without shelter, and get their own food for months. In this case, wild boar crossings can be easily explained. Besides, archaeozoological analyzes have already mentioned this phenomenon in the settlements of medieval Moldavia (Bejenaru et al 2014). Hybrids between the wild boar and domestic pigs were reported on other continents even today (Oroian et al 2014).

In the Middle Ages, in Moldavia, the pigs were not raised in the households but were flocked and allowed to feed themselves, preferably in beech and oak forests. The arrangement of special pig-raising places began only in the 18th century, and these places were called "purcărițe" (Bejenaru et al 2014).

Conclusions. Stocli breed originates from a non-isolated population from the reproductive point of view. The constant and repeated reproductive flow in the recent history between Stocli pigs and wild boar kept a similarity between them in all aspects: morphology, behavior, meat production and precocity. Although literature treats formally the Stocli pig as a domestic breed, it is difficult to determine whether the breed belongs to the wild species or to domestic form without molecular evidences. However, the Stocli breed is a reservoir of ancestral genes for the future of genetic improvement in swine breeds.

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