Socio-Economic Activities Involving Wild Boars and Their Habits

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The contexts of wild ungulate overabundance in Europe are protected, hunting, forestry, arable farming, livestock farming, and peri-urban areas. Wild boar (*Sus scrofa*) also known as the wild swine, common wild pig, Eurasian wild pig, or simply wild pig, can be considered the progenitor of the domestic pig (*Sus scrofa domesticus*).

Keywords: wild boar ; wild boar expansion ; wild boar management systems

1. Habits, Life, Expansion, and Emergence of Wild Boar

The contexts of wild ungulate overabundance in Europe are protected, hunting, forestry, arable farming, livestock farming, and peri-urban areas [1]. Wild boar (*Sus scrofa*) also known as the wild swine, common wild pig, Eurasian wild pig, or simply wild pig, can be considered the progenitor of the domestic pig (*Sus scrofa domesticus*). This species is categorized by the International Union for Conservation of Nature and Natural Resources (IUCN) as one of least concern; it is one of the most widely distributed mammals throughout the Palearctic region, North Africa, and Southeast Asia, and it is currently only absent from Antarctica [2][3][4][5]. It has been successfully introduced in many countries, becoming naturalized (named feral hog) in the New World and Australia [2]. To date, human activities such as hunting, introduction into new areas, breeding in the wild, and businesses involving swine (i.e., the marketing of animals for meat) have affected the distribution of wild boar all over the world [6][7][8][9]. Such activities have influenced the geographical distribution of the species by moving animals and promoting hybridization events, affecting the natural potential of its dispersion, and allowing the species to occupy areas that probably could not have been reached by Suidae [2]. It is found on many continents with different ethnic groups [2]. High adaptability allows wild boar to inhabit a wide variety of habitats (e.g., Mediterranean scrubland, semi-desert, tropical rain forests, grasslands, and anthropogenic habitats) [10][11][12]. Wild boars' diet, depending on the season, can consist of beechnuts, acorns, chestnuts, bulbs, rhizomes, and mushrooms; but, being an omnivore, foods of animal origin are not excluded and are based on local availability [2][5][13]. Acorns (*Quercus* spp.) represent a large part of the diet of wild boars (*Sus scrofa scrofa*) in their native European habitat [14].

Furthermore, through rooting, wild boars look for larvae, chrysalises, earthworms, and insects and if necessary, they will also eat carrion [2][13]. Overall, however, due to its size, it is an animal with low nutritional needs; it does not have any difficulty in feeding on agricultural products such as cereals, grapes, potatoes, etc. [13]. Its invasiveness depends on the obstacles it can encounter such as the presence of road networks, car collision events, and natural predators [15][16]. The natural predators, which depend on its geographical area, are wolves (*Canis lupus*), bears (*Ursus* sp.), leopards (*Panthera pardus*), striped hyenas (*Hyaena hyaena*), Eurasian lynx (*Lynx lynx*), bobcats (*Lynx rufus*), mountain lions (*Felis concolor*), and eagles (especially for piglets) [17][18]. However, even if considered harmful, in areas with the right agro-forestry density, wild boar is to be considered useful to the wood since, with its rooting and feeding on larvae and chrysalises, it moves the soil and buries the seeds of different forest species, thus favoring not only their germination and the birth of new plants but also the aeration of their roots [13]. At the same time, it removes a series of parasites ranging from insects to mice, thus contributing to the maintenance of the biological balance of the ecological niche to which it belongs [13]. It has been reported that wild boar may have added value as an ecosystem engineer for the preservation of threatened butterfly species [19][20][21]. Ecosystem engineers, such as large ungulates, are frequently used in conservation efforts in order to maintain biodiversity of open habitats [19]. Nevertheless, wild boar have been reported to be one of the top 100 species of the world's most invasive and parasitic animals, even in its native range [22][23], raising many management issues for agriculture, economy, human and animal health, biodiversity, and human–wildlife relationships [5][24][25][26][27].

In recent decades, wild boar has undergone a significant demographic increase causing economic and biodiversity damage in various countries [1][2][6][28][29].

Several management plans have been employed by various countries to mitigate the problem of the growing expansion of the different wild forms of *Sus scrofa* (wild boar, hybrid, and feral pigs) into new geographical areas and ecological niches [30][31].

The relative importance of several factors involved in boar expansion has been highlighted in [2] in order to provide new insights for the research and the development of collaborative management policies.

The most decisive factors in determining the widespread intensifying of wild boar densities include climate change, human-induced habitat modifications, abandonment of rural lands, increases in forests and hunting areas, predator regulation of the prey, hybridization with domestic forms, and transfaunation [2][6]. Wild boar emergence depends on a combination of causal factors which could act simultaneously and influence each other [2].

2. Socio-Economic Activities Involving Wild Boar

Ungulates are involved in different socio-economic activities [1]. Protected areas are mainly dedicated to conservation, so in this context, the hunting of ungulates is limited to managed culling or, in a minority of cases, prohibited (e.g., national park) [1].

Furthermore, wild boar is part of wildlife used for producing meat and in sport hunting all over the world [6]. Hunting areas are characterized by land where the main human activity is hunting, which is carried out for commercial interests. Hunting management is an agricultural land use of great economic importance in Europe [32]. European boar hunting is carried out with the help of hounds and using rifles [33]. The main objective in hunting areas is to produce high-quality game animals and large trophies [34][35][36]. Wild ungulate husbandry for hunting restocking must provide animals with high trophy merit and good wild traits [37]. The main product are adult males with high trophy merit, the value of which largely surpasses that of the meat, which is considered as a side product [37]. In general, hunting areas have two different management regimes, managed estates (fenced or open) and unmanaged estates [1][38], with different possible situations present in both regimes.

In fenced hunting estates, the main management actions are perimeter fences, supplementary feeding [39], and, less frequently, the addition of single ungulates to alleviate inbreeding [40]. In Italy, restocking game is usually reared in fenced park-type settings with minimal input [13][36]. Wild boar is generally kept in mono-specific stocks, while the other species can be reared in mixed herds [37]. Border fences guarantee the captivity of animals, as required by the law for the conservation of the genetic integrity of indigenous populations [13][37]. Animal restocking generally includes game for the restocking of shooting preserves (wildlife hunting and private agri-tourism hunting lands). Shooting preserves often comprise large enclosures, used both for raising wild ungulates and hunting them during the harvest season. This extensive husbandry system is suitable for less favored areas, where wild ungulates can exploit scarce and poorly available resources more efficiently than domestic animals [13][37]. The livestock load is kept extremely low, between 1 and 100 hectares per 100 kg of live weight, and annual or seasonal hunting must be scaled accordingly [13].

In open-managed game estates, the most common hunting area regime in Europe [41], the most common management measure is winter feeding, which is associated with maintaining high hunting densities and improving the quality of the trophies [42]. Reduced antler size [43] may constrain economic interests in hunting areas.

Recent natural population increases and the potential for breeding have renewed interest in wild boar as a meat producer [6]. Rusticity and adaptability, prolificacy (3–8 piglets per birth), the relative simplicity of rearing, and meat quality are the drivers of interest in wild boar meat farming systems (**Figure 1**, personal photo), as a purebred stock or crossed with pigs [13].

Figure 1. Female wild boar, Karpaty subspecies, with a piglet in a semi-intensive breeding system.

Wild boar breeding has spread to Japan and several countries in Europe and North and South America [6][44][45]. Farming would ensure a constant supply of this type of meat throughout the year [6][46]. Deer and wild boar are adaptable and respond well to intensive management systems [13][14][37].

Farming of wild ungulates to meet the growing demand for animal protein in the human population of developing countries, such as South Africa, is a global reality in confined, semi-confined (wildlife farming) [47], and extensive systems (game ranching) [48][49].

In Italy, because of the climate and pastures and the pressure for land use, intensive systems are not common, with local exceptions regarding farmed wild boar [37]. Wild boar breeding is generally regulated by the same laws that apply to domestic pigs [13]. The ideal location for semi-extensive farms for meat production are wooded areas with broad-leaved trees (chestnut, downy oak, and holm oak), tall trees, and copses [13]. For farmed wild boar meat production, heavier animals are preferred, with higher growth rates and thus characterized by greater feeding requirements [13].

Compared to extensive systems, meat production farms require specific inputs (fencing and handling systems, supplementary feeding) and management programs, aimed at meeting farm animal welfare requirements, ensuring operator safety, and maximizing the rates of reproduction and weight gain, together with the production of quality products, in order to compensate for the relatively high fixed costs and achieve maximum profitability [37]. Part of the livestock area (from 3 to 10%) must be made up of arable land (potatoes, corn, etc.) and pastures. The presence of water must be ensured such as ponds, streams, or puddles. Animal density is established on the basis of the trophic resources and generally, a load of three animals per 10 hectares is implemented [13]. The required area for a farm of this type is very extensive and can vary between 100 and 1000 hectares. The fence represents the greatest investment to be made [50]. Handling facilities should allow agricultural activities such as: sorting into groups, loading onto transport vehicles, tagging, condition scoring, weighing, drenching, and vaccination [13]. Moreover, wild ungulates may be slaughtered in the crush with a captive bolt according to veterinary policy regulations, after vet ante-mortem inspection [37]. As is the case for those shot in the field, these animals are immediately bled on the farm and then transferred to a local licensed abattoir, where evisceration, dressing, and vet post-mortem examination are performed [37].

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