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Review article

Wild boars and feral pigs as threats to humans

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Abstract. Wild boars (*Sus scrofa ferus*) native to Eurasia and North Africa have been introduced for hunting purposes in North and South America, and domestic pigs (*Sus scrofa domesticus*) were introduced as a food source worldwide by earlier explores, respectively. There are numerous feral populations of wild pigs (*S. s. ferus*, *S. s. domesticus* and their hybrids) in many countries outside their native range. These wild pigs pose a number of threats for humans through diseases transmission, attacks, environment degradation and others.

Key Words: wild pigs, rooting, ecological threat, disease, attack.

Introduction. The wild boar (*Sus scrofa ferus*) is a native species to Eurasia and North Africa (Murariu 2004; Bengsen et al 2011; O'Rourke & O'Flynn 2014). It has been introduced outside its native range for sport hunting in USA in 1925 (Jay & Wiscomb 2008) and in Uruguay at the beginning of the 20th century (www.redorbit.com).

Various strains of domestic pigs (*Sus scrofa domesticus*) have been introduced in many places for food by the early explorers, being now present worldwide, except for Antarctica (Barrios-Garcia & Ballari 2012). They have escaped captivity or were released by humans in the wild forming feral populations (Jay & Wiscomb 2008; Koichi et al 2012; O'Rourke & O'Flynn 2014). In Americas these two subspecies interbreed (Nordrum 2014), so we have wild feral pigs (domestic pigs escaped in the wild), Eurasian wild boars and their hybrids. We will use the generic name of wild pigs which comprises all the three types of pigs. Wild pigs are a very high risk invader because they can easily establish in a variety of habitats (Coblentz & Bouska 2005) and can cause a variety of damage. In this paper we discuss about the threats which feral and wild pigs pose to humans. There is a direct impact as diseases transmissions, attacks, and an indirect impact as environment degradation and others.

Direct impacts

Disease Transmission to Humans and Domestic Animals. Feral pigs can transmit up to thirty diseases both to humans and livestock (Wilson 2013). Some of them are: brucellosis, leptospirosis, foot-and-mouth disease, Japanese encephalitis, pseudorabies (Bengsen et al 2011), cryptosporidiosis, salmonellosis, bacterial gastroenteritis and *Escherichia coli* (Jay & Wiscomb 2008), avian influenza, swine fever (Hutton et al 2006). Feral pigs also carry many helminth parasites that are passed to humans through contact and consumption of improperly cooked meat (Bengsen et al 2011; O'Rourke & O'Flynn 2014). Bovine tuberculosis was transmitted to beef cattle by wild hogs on the Hearst Ranch in California in 1965, and pork that was infected with hog cholera brought into Kosrae Island in the East Carolinas resulted in the decimation of all domestic hogs on the island (Barrett & Birmingham 2005).

Attacks on Humans. The wild pigs can be aggressive to humans when they are cornered, trapped or injured (O'Rourke & O'Flynn 2014). These attacks occur mostly during hunting (<http://thehunterwiki.com>) or when sows with piglets are encountered. Males use their tusks and can cause severe injuries especially in lower parts of the human body, cutting the skin and even arteries; sows can inflict serious, repeated, bite wounds (www.britishwildboar.org.uk) (Figure 1).



Figure 1. Severe injury caused by a wild pig (Source: <http://www.louisianasportsman.com/details.php?id=6200>).

Indirect Impacts

Economic Impact. Each year in the USA wild pigs cause \$800 million in damages to croplands only (Rouhe & Sytsma 2007). In 1998 in California, it was estimated that the economic loss resulting from wild pigs rooting was \$1.73 million (Masterson 2007). Feral pigs cause approximately \$100 million in agricultural damage in New South Wales and Queensland (Australia) alone (Natural Heritage Trust & Australian Government 2005).

Impact on the Rainforest Tourism. Invasive alien species potentially pose a threat to the sustainability of ecotourism by degrading the quality of the environment on which the industry depends. It is the case of the Wet Tropics World Heritage Area of North Queensland, Australia, where in many occasions tourists decided to avoid the area for the future due to the presence of feral pigs (Koichi et al 2012).

Effects on Agriculture Lands and Livestocks. The most common aspect is rooting, which results in the destruction and the consumption of crops and pastures, consequently causing soil erosion (McIlroy 2001; Barrett & Birmingham 2005). They also cause damages to fences, and they can alter the quality of water from farm ponds or reservoirs (Oliver et al 1992), also eating farmed animals as sheep, lambs, goats, turkeys (Pavlov & Hone 1982; Barrett & Birmingham 2005). They also mate sometimes with domestic pigs (www.britishwildboar.org.uk).

Effects on Urban and Residential Areas. Wild pigs often enter urban and/or residential zones where they can root large areas in gardens (Figure 2) or can scatter the garbage (Figure 3). They also come in contact with pets as dogs, can causing injuries to them. There are many cases when wild pigs cross the streets or highways, causing

sometimes considerable damages to the vehicles (www.britishwildboar.org.uk). Sometimes they even enter stores or shops.



Figure 2. Effects of wild pigs rooting on a private property (Source: <http://1.bp.blogspot.com>)



Figure 3. Wild pigs scattering the garbage in an urban area (Source: www.britishwildboar.org.uk).

Effects on the Wild Environment. Wild pigs eat birds chick and eggs, reptiles and reptile eggs, frogs, small or young mammals, numerous invertebrates, underground fungi and plant species (Natural Heritage Trust & Australian Government 2005). Thus they have a negative impact on the native species through predation, food resources and habitats. A special concern is related with endemic or protected native species. The wild pigs eat certain tree seedlings (Barrett & Birmingham 2005) or spread them in new habitats. They root large areas causing soil erosion or affecting the soil mineral composition (McIlroy 2001; Hone 2002). They also have an impact on water sources as lagoons, lakes, swamps (Mitchell 2011).

Conclusions. Wild pigs cause a wide range of negative impacts on humans and environment. They can transmit diseases, sometimes attack both humans and domestic animals. Rooting large areas cause damages and economic losses in agriculture lands. They prey on native species and compete with them on food resources and habitats. It is desirable to prevent the spreading of wild pigs in new areas; for the areas where they already exist effective control or eradication methods need to be applied.

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