INTRODUCTION

Within the family Suidae (true pigs), there are 5 genera and 8 or more species (Nowak, 1991; Oliver, 1992). The family Tayassuidae (peccaries) contains 2 genera and three species (Nowak, 1991). There are enough similarities between pigs and peccaries to warrant, with few exceptions, the recommendation of similar husbandry standards. The species covered include:

<table>
<thead>
<tr>
<th>LATIN NAME</th>
<th>COMMON NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babyrousa babyrussa</td>
<td>Babirusa</td>
</tr>
<tr>
<td>Hylochoerus meinertzhageni</td>
<td>Giant forest hog</td>
</tr>
<tr>
<td>Phacochoerus aethiopicus</td>
<td>Wart hog</td>
</tr>
<tr>
<td>Potamochoerus porcus</td>
<td>Bush pig or Red river hog</td>
</tr>
<tr>
<td>Sus barbatus</td>
<td>Bearded pig</td>
</tr>
<tr>
<td>S. salvanius</td>
<td>Pygmy hog</td>
</tr>
<tr>
<td>S. scrofa</td>
<td>Eurasian wild boar, domestic pig</td>
</tr>
<tr>
<td>S. verrucosus</td>
<td>Javan pig</td>
</tr>
<tr>
<td>Catagonus wagneri</td>
<td>Giant peccary</td>
</tr>
<tr>
<td>Tayassu pecari</td>
<td>White-lipped peccary</td>
</tr>
<tr>
<td>T. tajacu</td>
<td>Collared peccary</td>
</tr>
</tbody>
</table>

Wild pigs and peccaries are all social animals, with the peccaries (Packard, *et al.*, 1990; Sowls, 1984; Byers and Bekoff, 1981) exhibiting the greatest degree of social cohesion. Group size is dependent upon the species, sex ratio and age structure, familial relationship, and time of year (Macdonald, 1984; Nowak, 1991; Brisbin, 1992). Despite their social nature, solitary animals (usually males) are also found.

Most litters of pigs and peccaries average two or more (Macdonald, 1984; Brisbin, 1992), the exception being the babirusa, *Babyrousa babyrussa*, whose litters often include but a single young (Bowles, 1986). Young pigs are generally less precocious than those of peccaries. Sows of both families make nests for the actual birth.

Pigs and peccaries are highly intelligent ungulates and easily trained for husbandry purposes. Although many individuals become quite tame in captivity, all species possess formidable canine teeth and have been known to inflict serious injuries on their keepers; given their capabilities, all individuals should be handled with the utmost respect.
HUSBANDRY

Due to similarities in housing requirements, social structure, and dietary habits, the following recommendations apply to all species; species-specific exceptions are as noted.

Housing: The spatial requirements for housing pigs and peccaries can be extrapolated from minimum standards established by Fritschen and Muehling (1980) for domestic swine: 40-60 sq. ft. per male, 40-60 sq. ft per sow and litter (when housed in isolation), and 20-30 sq. ft. per sow and litter when housed communally. Like domestic pigs, female wild pigs and peccaries benefit from some isolation during and immediately following parturition. Males and even females in most genera may display aggression toward their own newborn piglets.

The vertical height of all indoor housing should be at least 5 ft. (1.5 m.) if the ceiling does not preclude jumping. Warthogs, Eurasian wild boar, bearded pigs and peccaries are good jumpers.

If enclosure substrates are concrete or some other hard surface, heavy bedding or rubber matting should be used to cushion the surface. Domestic pigs are highly susceptible to confinement lameness when housed for long periods on concrete and wild species are likely to be as well.

Outdoor housing, when available, should provide adequate space for animals to exercise and engage in normal activities. The minimum space per animal may be commuted by doubling the recommended space for indoor housing. Boar and sow-litter units housed in isolation require at least 80 - 120 sq. ft. (7.44 - 11.16 sq. ft.). When housed communally, each sow-litter unit should receive at least 40-60 sq. ft. (3.72 - 5.58 sq. m.). The yard substrate should possess cushioning properties, i.e. grass dirt, sand, or mulch, to prevent confinement lameness.

All vertical containment barriers should be high enough to discourage jumping. Accomplished jumpers such as warthog, wild boar, bearded pig and all peccaries can be maintained behind a vertical barrier at least 5 ft. (1.5 m.) high. An alternative barrier that has proven equally effective is a solid wall 4 ft. (1.2 m.) high which is inclined at a 20 degree angle in the direction of the animal. Peccaries have been successfully contained by a similar angled barrier 56 in. (142 cm.) high.

Where wire mesh is used, the mesh openings must be less than 2 sq. in. to contain piglets or piglets should not be given access to these barriers until they have grown large enough to be contained by the mesh. Electrified fencing, has been successfully used in pig and peccary exhibits. If open moats are used, a minimum depth of 5 ft. (1.5 m.) is required unless an angled barrier is employed. A minimum span of 6 - 8 ft. (1.8 - 2.4 m.) is required for adequate containment. Because most species can swim, water moats should NOT be used.
Newly arrived animals may injure themselves colliding with barriers. These animals can be acclimated to new quarters by initially housing them behind vertical barriers that are flexible. If wire mesh is used, it should be draped with burlap, opaque plastic, shade cloth or other fabric to give it the appearance of being solid. Corners of these acclimation yards should be rounded whenever possible to reduce the risk of collision injuries.

Most wild pigs and peccaries like to dig; the resulting damage to substrate and plantings can be significant. All trees and shrubs should be protected with some form of physical barrier. Containment barriers should be mounted on concrete footings or partially buried to prevent escape by digging.

**Temperature:** Pigs and peccaries are adapted to a wide range of temperatures; peccaries exhibit the greatest tolerance of temperate extremes. With the exception of Eurasian wild boar, wild pigs are generally less tolerant of extremely low temperatures and the ability of all species to acclimate to temperatures below 40 degrees F (5 C) depends on a variety of factors: wind, humidity, precipitation, cloud cover, shelter and temperature differential between indoor and outdoor enclosures.

Most young pigs and peccaries, like domestic swine (Curtis 1980), require more supplemental heat than adults. The exception are Eurasian wild boar, whose young require no supplemental heat if the sow is acclimated to the ambient temperature and provided with a nesting area (Foley *et al.*, 1971).

Expectant sows of all species should be provided with a farrowing crate or den and nesting material such as hay. Commercial pig warmer mats or radiant heat lamps may also be used to boost the temperature. Nesting areas should be well ventilated but free of drafts.

Overheating is a common problem of domestic swine which lack access to shade or water during hot weather (Curtis, 1980) and all animals kept outdoors should have access to shade and wind shelter. All species also need access to a pool, shower or mud wallow during hot weather. Wallows are particularly beneficial because they both cool the animals and coat their skin with a protective layer of mud which acts as a sunscreen. Mud may also provide protection against external parasites. Wallows should be flushed with fresh water on a regular basis to ensure good sanitation. When temperatures in indoor enclosures exceed 90 degrees F (32 C), air circulation should be increased by using fans or other means.

**Lighting:** The majority of species in both families are either crepuscular or nocturnal. The activity patterns of all species are highly adaptable, however, and the ease with which pigs and peccaries adapt their activity cycles suggests they can thrive under a variety of light levels. Forest-dwelling and/or nocturnal species may benefit from heavier shade in outdoor enclosures.

**Ventilation and Humidity:** Good ventilation in indoor enclosures is essential for the respiratory health of domestic and wild species (Lubinus and Murphy, 1980). There
should be a minimum of 5 - 10 air exchanges of non-recirculated air per hour. Care must be taken to establish draft-free comfort zones, particularly when young are present.

All species experience a wide range of humidities in the wild. Like domestic swine (Curtis, 1980), wild species do not rely on evaporative cooling, and high vapor pressure is not a major factor in thermoregulation when temperatures are below 90 degree F (32 C). Access to shade, fans, and water during periods of high humidity associated with high temperatures will minimize the risk of hyperthermia. Supplemental heat may be needed on cool days associated with high humidity.

Air quality is also affected by sanitation practices (Curtis, 1980). Exposure to airborne dust and noxious gases can be minimized by regular cleaning of holding areas. Odors can be controlled through the use of deodorizing detergents and odor-absorbent bedding material such as wood shavings.

**Sanitation**: Primary holding stalls should be cleaned daily unless dictated by the nervous temperament of post-partum sows. Minimum cleaning should consist of removing fecal material and replacing soiled bedding with new material. Every stall should be stripped and disinfected on a routine basis, the interval determined by stall size and the number of animals but not to exceed 7 days. All feed pans and waterers should be cleaned and disinfected daily. Outdoor enclosures should be raked and spot-cleaned daily.

**Water**: Fresh, clean drinking water should be available at all times. Commercial hog waterers are available or large water tubs may be used although but pigs and peccaries may turn them over. All drinking containers should be cleaned and disinfected daily.

**Food**: Pigs and peccaries are omnivorous in the wild but obtain the bulk of their diet from plant material. A dietary program developed from guidelines for domestic swine may be used, factoring in species specific dietary requirements as needed. Owners also need to adapt recommendations originating from the domestic swine industry in order to control obesity problems common in exotic suidids. Chacoan peccaries may benefit from or require natural browse.

All dietary components should be wholesome and free of foreign matter, vermin, mold and chemical contamination. Uneaten items should be removed in a timely fashion to prevent the possibility of food-borne illness. To prevent white-muscle disease, adequate levels of vitamin E/selenium should be incorporated into the diet (Blood and Henderson, 1975; Junge and Miller, 1989; Lannek et al., 1961; Van Vleet, 1980; Whitehair and Miller, 1981).

**Environmental Enrichment**: Wild pigs and peccaries, like their domestic counterparts (Curtis, 1980), are highly intelligent and benefit from environmental enrichment. Produce and other food treats may be scattered about the enclosure or otherwise presented in a novel and random fashion. Care must be exercised to insure that treats are not offered in such quantities as to dilute the nutrient content of the base diet.
Wild pigs and peccaries will also use a variety of toys such as balls and logs to provide stimulation without affecting the nutritional status of the animals. Substrates such as sand, dirt, mulch or leaf litter will provide a release for the animals' natural tendency to dig and root.

**Veterinary Care**: Services of a large animal veterinarian should be available. Periodic fecal examinations (at least twice yearly) should be performed to check for parasitic infestations and treated as appropriate. When circumstances permit, a complete physical should be performed.

Few infectious diseases are reported for exotic swine but most species are probably susceptible to the same diseases that affect domestic pigs (Kloes and Lang, 1982; Wallach and Boever, 1983; Fowler, 1978). Vaccination programs should be based on disease problems indigenous to the owner's geographic region as well as the exposure potential to vectors for those diseases. The possibility of vaccine-induced disease when using modified-live vaccines should also be considered when designing a vaccination protocol.

Depending on region, the following vaccination regime should be considered: erysipelas, leptospirosis, parvovirus, tetanus, and rabies animals of all ages, and transmissible gastroenteritis (TGE), bacterins for *E. coli* and atrophic rhinitis, pseudorabies, rota- and coronavirus for young and growing swine. TB testing and brucellosis serology on an opportunistic basis is also advised for all species.

Young should be provided with adequate supplemental heat and a physical exam performed within the first few days post-partum unless dictated by the temperament of the sow. Exams should include auscultation of the heart and lungs, examination of the perineum for gross urogenital defects and atresia ani, and an overall inspection for gross abnormalities. The umbilicus should be swabbed and, if necessary, trimmed and tied.

Because domestic piglets are susceptible to iron-deficiency anemia, a supplemental injection of iron is recommended for young of all species. Supplemental injections of vitamin E/selenium are also recommended. All young should be clearly marked with some form of identification (tattooing, ear-notching, transponder use, etc.). A prophylactic injection of a repository antibiotic may give some temporary measure of protection to the neonate until its immune system is fully functional.

Wild pigs and peccaries are susceptible to stress-induced hyperthermia although there is a good deal of individual variation as to how well a given animal will tolerate manual restraint. Elective procedures involving restraint of any kind (manual, mechanical, or chemical) should be scheduled for the cooler part of the day when ambient temperatures are under 85 degrees F (28 C). When not practical, fans, cold water or other means of cooling should be available.
American Zoo and Aquarium Association
Minimum Husbandry Guidelines for Mammals: Wild Swine

LITERATURE CITED


