

# IUCN SSC Wild Pig Specialist Group



#### CHAIR

Johanna  
Rode-Margono

Stiftung Artenschutz  
(Cologne Zoo,  
Cologne, Germany)

#### RED LIST AUTHORITY

##### COORDINATOR

Kristin Leus

Scientific Department,  
Copenhagen Zoo,  
Denmark

#### NUMBER OF MEMBERS

46

#### SOCIAL MEDIA AND WEBSITE

Facebook: IUCN / SSC Wild Pig Specialist Group

Website: <https://www.iucn-wpsg.org>

### Mission statement

The SSC Wild Pig Specialist Group (WPSG) has not yet defined a mission statement. Key components of such a statement would be: (1) viable wild pig populations, (2) all wild pig taxa, (3) threat management, (4) conservation breeding, (5) reintroduction, (6) habitat restoration and management, and (7) resolution of conflicts with people. Most wild pig species are in decline, especially the various species and subspecies in Indonesia and the Philippines. The WPSG uses a combination of strategies to try to reduce these population declines. This primarily includes (1) research on taxonomy and distribution (the cornerstone of any conservation management), and (2) management of captive and wild populations to prevent the extinction of the most threatened species.

### Projected impact 2021–2025

We aim to safeguard the small populations of the two Critically Endangered suid species, Pygmy Hog (*Porcula salvania*) and Visayan Warty Pig (*Sus cebifrons*), and to continue the captive breeding and reintroduction programmes. The target for Pygmy Hogs is to ensure a population in the wild of

at least 250 individuals. For Visayan Warty Pig, we aim to conduct the first successful reintroduction programme on the island of Negros. For all other species, we aim to reliably assess population status and trends, and to initiate or adapt conservation programmes that can stabilise populations in the wild. For Wild Boar (*Sus scrofa*) we still aim to revise the taxonomy of the current 18 subspecies.

### Targets 2021–2025

#### ASSESS

**T-003** Assess the taxonomy of Sulawesi ungulates by conducting phylogenetic/taxonomic research, by 2021.

**T-008** Assess the population status (distribution, numbers of populations, population size) of the Mindoro Warty Pig, by mid-2022.

**T-013** Survey and monitor the Javan Warty Pig (*Sus verrucosus*) (continuous).

**T-014** Clarify the species status of Bawean Warty Pigs (*Sus blouchi*) by end of 2021.

**T-025** Assess the status of the Giant Forest Hog (*Hylochoerus meinertzhageni*) in Uganda, by mid-2022.

**T-026** Re-assess the Giant Forest Hog status, by end of 2022.

**T-027** Conduct comprehensive surveys on all pig species in Indonesia and Malaysia, by end of the quadrennium.

**T-028** Assess the phylogenetic relationships of all Philippine pig species, by end of 2023.

**T-030** Explore the potential threat of hybridisation to wild pig species, in relevant species, by end of the quadrennium.

**T-034** Conduct ecological research on the Pygmy Hog (habitat, determinants of presence, etc.), by the end of the quadrennium.

**T-037** Develop a database of ancient and recent data on the distribution of Giant Forest Hog in order to update its geographical range, provide a basis for the analysis of its range contraction and contribute a future assessment of its Red List status.

**T-038** Study the morphology and phenotypic differences between the two species of warthog.

**T-039** Study the eco-ethology, ethnobiology and the sympatric relationships between Red River Hog (*Potamochoerus porcus*) and Common Warthog (*Phacochoerus africanus*) in different ecosystems in southern Benin.

#### PLAN

**T-001** Develop a Conservation Needs Assessment and Planning Strategy for all species, with the Conservation Planning Specialist Group (CPSG), by end of 2022.

**T-002** Develop an EAZA Tapir and Suiform Regional Collection Plan.



Pygmy Hog (*Porcula salvania*) adult female  
Photo: Parag Deka

**T-004** Finalise the output of the West Visayan Conservation Workshop, by mid-2021.

**T-012** Develop action plans in relation to the threat of African Swine Fever to prioritised wild pig species in Asia, by end-2021.

**T-017** Develop action plans in relation to the threat of African Swine Fever to all relevant wild pig species in Asia, by end-2022.

#### **ACT**

**T-005** Conduct the first successful Visayan Warty Pig reintroduction programme, by 2024.

**T-006** Streamline the efforts of conservation breeding of Visayan Warty Pigs on Negros and Panay through networking, capacity building and breeding plans.

**T-009** Ensure active and comprehensive collaboration of conservation breeding of Javan Warty Pigs, by mid-2022.

**T-011** Secure at least one safe and pure population of Javan Warty Pigs in the wild, by end of 2022.

**T-015** Establish a successful release programme for Javan Warty Pigs in East Java, by end of 2024.

**T-024** Implement the Babirusa (*Babirusa* spp.) Global Species Management Plan.

**T-031** Develop a database for African pig species data, by end of 2022.

**T-032** Release 60 Pygmy Hogs in the next five years, starting from 2020, in the Rupahi grassland of Manas National Park, by end of the quadrennium.

**T-033** Identify and monitor the status of wild and released populations of Pygmy Hogs (continuous).

**T-035** Conduct a Disease Risk Analysis (DRA) to establish a robust biosecurity protocol to ensure the management of a healthy breeding programme for Pygmy Hogs, by the end of 2021.

#### **NETWORK**

**T-016** Formalise advisory committee and regional advisors, by end of 2021.

**T-018** Update membership and recruit new members for neglected species and other disciplines.

**T-020** Develop fundraising plan, making contacts with the pig production industry for fundraising, by end-2021.

**T-021** Build an effective network of WPSG Africa experts, by end-2021.

**T-022** Develop a system for regular meetings (e.g. online) to improve group dynamics, by end of 2021.

**T-023** Use the International Symposium on Wild Boar and Other Suids as a platform for WPSG activities in 2022.

**T-036** Finalise a new memorandum of understanding (MoU) between the main partners for the continuation of the Pygmy Hog release programme for five more years, by end of 2021.

#### **COMMUNICATE**

**T-010** Regularly publish the WPSG's Newsletter *Suiform Soundings* (continuous).

**T-019** Update the website, including a restricted member area for communication, by mid-2021.

**T-029** Update all members on African Swine Fever (ASF) globally (continuous).

### **Activities and results 2021**

#### **ASSESS**

##### **Red List**

**T-026** (KSR 6)

**Number of global Red List reassessments completed:** 0

**Result description:** Research is still carried out on the occurrence and conservation status of the species in some parts of its range, but current data already suggest that populations are increasingly fragmented and isolated due to deforestation and a variety of other destructive human activities.

##### **Research activities**

**T-003** (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 0

**Result description:** Research is ongoing for a planned Anoa (*Bubalus depressicornis* and *B. quarlesi*) taxonomy publication. James Burton (Asian Wild Cattle Specialist Group Chair) and Marcel Alaze (Anoa EAZA Ex situ Programme Coordinator) have expanded the Anoa taxonomy research group to include a taxonomic researcher from the German Centre for Integrative Biodiversity Research (iDiv), Leipzig Zoo and European zoo professionals to build more data into the Anoa research and planned taxonomy publication. The results of recent genetic analysis by Queen Mary's University have added further unexpected complexity to the Anoa population structure, necessitating greater taxonomic analysis to match the detailed genetic assessment.

T-008 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 0

**Result description:** Several surveys were conducted, and an oral presentation at the International Symposium for Wild Boar and other Suids 2022 is planned by the project.

T-013 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 1

**Result description:** This is a continuous project. In 2021, the Javan Species Recovery Programme (JaSpeR) conducted the following activities: continued camera trap monitoring, improving relationships with hunters in the area to be able to rescue wounded warty pigs, conducting a distinct experimental research project on the effectiveness of crop protection measures, and continuous community awareness activities.

T-014 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 1

**Result description:** The project genotyped *Sus scrofa vittatus*, *Sus blouchi* and *Sus verrucosus* samples using the Porcine SNP60 v2 BeadChip (Illumina Inc.). The dataset was merged with published data from *S. verrucosus*, *S. celebensis* and *S. barbatus*. Preliminary results of most analyses show that the divergence between *S. verrucosus* and *S. blouchi* is more pronounced than that between *S. celebensis* and *S. barbatus*. Furthermore, our genomic data indicate that *S. verrucosus* and *S. blouchi* are phylogenetic species with an allopatric distribution. A publication is in preparation.

T-025 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 1

**Result description:** We successfully completed the Project 'Conservation of Giant Forest Hog in a Set of Protected Areas of Western Uganda' by Rafael Reyna, Mario Melletti and Jean Pierre d'Huart. This project is unique in the world for the ecological aspect of Giant Forest Hog (GFH), as we had the opportunity to monitor for two years at least 12 different groups of GFH in three protected areas of Western Uganda and we conducted the first occupancy model study for six months in three protected areas. We collected more than a half million images

of African wildlife, specifically from the forest areas of Kibale National Park (Kibale NP), Queen Elizabeth National Park (Queen Elizabeth NP) and Toro Semliki Wildlife Reserve (Toro Semliki WR). This project produced the largest set of photos of at least 12 distinct groups of GFH in the world, with more than 8,000 photos. These photos showed population patterns, group sizes, group structures, daily habits, occupancy rate and other species interactions. In addition to the assessment aspect, several conservation aspects have been combined in the project: snare removals, assessments of consumption of wild pig meat, provision and promotion of domestic pigs, and an awareness festival.

T-028 (KSR 5)

**Number of readings/citations per scientific paper published:** 0

**Result description:** Due to the pandemic situation, there was no fieldwork on Mindoro in 2021. In collaboration with Central Mindanao University, the project lead managed to amplify PCR products from *Sus scrofa*, *Sus cebifrons*, *Sus oliveri*, *Sus philippensis mindanensis* and, possibly, *Sus barbatus* with seven mt-DNA markers (cytB, d-loop, COI). Currently, they are still waiting for the sequencing results. Preliminary results are expected by the end of 2022.

T-034 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** ongoing

**Result description:** Not too much progress has been made, but habitat surveys to monitor succession and habitat degradation have been conducted. A publication is planned in 2022.

T-037 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 1

**Result description:** Since 2019, a database ('WildPigBase') has been established for the three main suid genera and is accessible online to WPSG members. Its 'ForestHogBase' section contains detailed information on 350+ ancient and recent observations of Giant Forest Hog all over its range. Historic and current distribution maps have been compiled and have already provided a contribution to a research team from the Sapienza University of Roma

(led by Dr Michaela Pacifici) on selected mammals' habitat availability between retained and lost range. This information will also contribute to the next Red List status assessment planned for end of 2022. Another important source of information available online is WPSG's 'African Wild Pig Resource Platform' (<https://www.wildsolutions.nl/african-wild-pigs/>) that provides open access to PDF copies of key bibliographic references on Giant Forest Hog.

T-038 (KSR 5)

**Number of research projects completed or supported by SSC members per taxonomic group and region:** 6

**Result description:** Six research projects have been carried out: (1) The long-term research project on the biogeography of the Desert Warthog (*Phacochoerus aethiopicus*) and Common Warthog (*Phacochoerus africanus*) in the Horn of Africa (Eritrea, Ethiopia, Djibouti, Somalia, Kenya); (2) Surveys in northern Laikipia, central Kenya, as a new (fifth) region of sympatry between Desert Warthog and Common Warthog, that also resulted in new information on the distribution, abundance, population structure, ecology and behaviour of Desert Warthog in Laikipia; (3) On the basis of photographs of warthog faces from all corners of the Horn of Africa, an investigation is being carried out by Jean-Pierre d'Huart on the possible distinctiveness between Common and Desert Warthog by the proportions of specific facial features; (4) Nocturnal activity of Common Warthog in Rimoi Game Reserve, southwest Kenya, was investigated; (5) The current knowledge of the evolution and paleoecology of the Desert Warthog and Common Warthog was reviewed; (6) Erill et al. sequenced the first whole genomes of four Desert Warthogs and 35 Common Warthogs from throughout their range. Warthog genomes resolve a biogeographical conundrum and reveal interspecies introgression of disease resistance genes. All six projects have resulted in publications or soon-to-be-published manuscripts that are available on request.

T-039 (KSR 5)

**Number of scientific publications about species research that acknowledge SSC affiliation:** 3

**Result description:** The PhD thesis on this topic will be defended in early 2022. Three scientific articles have already been published on the results, with two more manuscripts pending. The publications can be requested.



Vulnerable Babirusa (*Babyrousa babyrussa*)  
Photo: Chester Zoo

## PLAN

### Planning

T-002 (KSR 8)

**Number of conservation plans/strategies developed:** 1

**Result description:** The Regional Collection Plan was discussed in a workshop in November 2020, and the final document finalised a few months after. A summary can be found under: Zimmermann M., et al. (2022). 'One Plan Approach to save species — a new integrative Regional Collection Plan for hippos, pigs, peccaries, and tapirs'. *Suiform Soundings* 20(2):9–14. Available from the IUCN WPSG website at: <https://www.iucn-wpsg.org/>.

T-004 (KSR 8)

**Number of conservation plans/strategies developed:** 0

**Result description:** Little progress was made on finalising the report during 2020–2021.

T-012 (KSR 8)

**Number of conservation plans/strategies developed:** 1

**Result description:** We conducted an online workshop about ASF risk assessment together with Philippine stakeholders, entitled 'Disease Risk Analysis (DRA) to improve management of ASF among wild pig species in the Philippines', from 25–27 August 2021.

## ACT

### Conservation actions

T-005 (KSR 10)

**Number of conservation translocations conducted:** 1

**Result description:** Talarak Foundation Inc. have reintroduced a total of 21 Warty Pigs into the Bayawan Nature Reserve in Negros in 2020–2021. Since then, there were three mortalities (one male, two female) but more than 14 new wild born offspring. The wild behaviours, body conditions and regular breeding of almost every released female in the reserve has highlighted that the pigs are adapting well to their new environment. Note: Despite being a large area, it is still fenced and the threat of hunting if the fence would be opened is assumed to still persist. Hence, the reintroduction is not yet complete.

T-009 (KSR 10)

**Active collaboration for breeding of Javan warty pigs:** ongoing

**Result description:** A studbook was produced by the end of 2020, distributed in 2021, by Cikananga Wildlife Center. There have been no official breeding recommendations, but various population holders work effectively together to create satellite populations and to provide animals for release at Baluran National Park.

T-011 (KSR 10)

**Number of areas under management for the species or group of species:** 1

**Result description:** There is good progress in two areas on Java: a reintroduction of Javan Warty Pigs in Baluran National Park, led by Copenhagen Zoo (see target T-015), and the Javan Species Recovery Programme's Javan Warty Pig project in West Java. The latter is in the process of creating a community-based project that protects an important area for the Javan Warty Pigs, by working together with hunters, farmers and other members of the community. The project is in progress but not yet at a stage where it can be called 'in place'.

T-015 (KSR 10)

**Number of species with increased or prevented decrease in population or range size, as a result of conservation actions:** 0

**Result description:** In 2021, the biggest milestone was the first birth of Javan Warty Pig piglets in Baluran National Park for 20–30 years, in the reintroduction cages. Although only one of four piglets survived, this was a big success, and the experience will prepare for following births. Also, nine Javan Warty Pigs were transferred from Cikananga Wildlife Center in West Java to Baluran to join the breeding stock.

T-032 (KSR 10)

**Number of conservation translocations conducted:** 1



Visayan Warty Pig (*Sus cebifrons*)  
Photo: Talarak Foundation



Pygmy Hog (*Porcula salvania*) mother and new born  
Photo: Parag Dekka

**Result description:** Twelve Pygmy Hogs (six males, six females) were released in the later part of June 2021 in the Rupahi grassland of Manas National Park. So far, 26 hogs have been released in this grassland. A cohort of 14 hogs will be released in June 2022.

T-033 (KSR 10)

**Number of conservation translocations conducted:** 1

**Result description:** Surveys searching for sign, such as nests and pellets of Pygmy Hog, were carried out in the grassland area of the three ranges – Bansbari, Bhuyanpara and Panbari – of Manas National Park (MNP) after the annual burning (February and March) in the last four years.

#### Synergy

T-031 (KSR 10)

**Database development:** Ongoing.

**Result description:** Locality records of all five African wild pigs are recorded in the WildPigBase, an online Google Sheet [WarthogBase (two species), ForestHogBase, BushPigBase and RedRiverHogBase]. Input consists of locality name, country, subspecies, coordinates, altitude, etc., and can be provided by those who attended the Kibale meeting (October 2019) or by filling out the online form 'African wild pig locality records' on <https://www.wildsolutions.nl/wildpigs/> after an encounter with an African wild pig. WarthogBase is administered by Yvonne de Jong, ForestHogBase by Jean-Pierre d'Huart. The BushPigBase and RedRiverHogBase are still in need of an administrator. Until now both WarthogBase and ForestHogBase have led to updated distribution maps (see above). The next step is to find an administrator for both

the BushPigBase and RedRiverHogBase, to actively request additional records for all five taxa, and to update the distribution maps once every two years.

#### Technical advice

T-006 (KSR 10)

**Effective collaboration between different breeding centres; technical advice and funding offered to ensure effective breeding:** 0

**Result description:** A formal Memorandum of Agreement between Talarak and Silliman University has been created to collaborate efforts in the captive maintenance and in situ conservation activities of the spotted deer and warty pigs. Aligned with this, LA Zoo and Bristol Zoo had keepers work alongside Talarak to provide training and assistance in the Silliman University Center for Tropical Conservation Studies (CENTROP) captive breeding centre, with which Talarak maintains communication and remote assistance. There has been no further interaction with Mari It or any other breeding centres in Panay or Negros.

T-024 (KSR 10)

**Number of technical consultations provided to support conservation actions:** 10

**Result description:** In 2021, the Education Working Group of the Global Species Management Plan (GSMP) ran two 2-day virtual training workshops with Indonesian Zoo educators in June and September on the topics 'Developing Conservation Education Plans' and 'Interpretive Planning', to over 50 participants from Indonesian zoos. Training was delivered by four international zoo staff, including Chester Zoo and Miami zoo, as well as two Indonesian zoo staff from Ragunan Zoo and Bali Safari Park. Four population managers provided technical mentoring and training of Indonesian studbook keepers and of the Indonesian Zoo and Aquarium Association

(PKBSI)-GSMP Programme Officer, in collecting and analysing data (one manager for Babirusa). Studbook information compiled by the studbook keepers will inform the third set of breeding and transfer recommendations to be finalised in 2022. Technical training and consultations from two genetic experts from Copenhagen Zoo and Queen Mary's University has strongly supported the PKBSI-led sampling and genetic assessment of the founder animals of the Indonesian zoo populations of Anoa, Babirusa and Banteng (*Bos javanicus*). Assessment of founder animals is particularly important, as their genetics are underrepresented in the global zoo population. In 2021, 80% of the 85 samples were collected and DNA was extracted from 53 samples for sequencing.

T-035 (KSR 10)

**Number of technical consultations provided to support conservation actions:** 1

**Result description:** A student from Royal Veterinary College, US, was engaged to conduct a Disease Risk Analysis (DRA), using the Zoological Society of London (ZSL) methodology. DRA was conducted on four selected infectious agents which could cause disease and impact the Pygmy Hog in captivity managed by the Pygmy Hog Conservation Programme (PHCP). These agents are three viruses and a bacterium: Porcine Reproductive Respiratory Syndrome Virus (PRRSV), Classical Swine Fever Virus (CSFV), African Swine Fever Virus (ASFV), and *Salmonella enterica* serotype *choleraesuis*. A biosecurity assessment of the Pygmy Hog Conservation Programme's captive facilities was also completed along with the DRA by end of August 2021, and all suggestions were adopted for Disease Risk Mitigation. A publication on this is being planned.

## NETWORK

### Membership

#### T-016 (KSR 2)

**Advisory committee and regional coordinators chosen and formalised: 1**

**Result description:** The advisory committee and regional coordinators are complete and formalised (posted on our website) now. A new ex situ focal person has been chosen (Joerg Beckmann).

#### T-018 (KSR 2)

**Number of SSC members recruited: 5**

**Result description:** Through the necessary re-confirmation of all members, we decreased in membership from 65 to 46. We recruited five new members and are en route to a group with lots of active members.

### Synergy

#### T-021 (KSR 2)

**Effective regional WPSG network in Africa: 0**

**Result description:** In 2019, a Kibale expert meeting was conducted successfully (details in: Reyna et al. (2020). 'African Wild Pigs: Conservation Status and Research Efforts'. *Suiform Soundings* 18(2):6–10). This was the first step towards an active network. As a result, an African member with good knowledge and a large network in Africa was recruited and a network was established. In order to be truly active, the network would need to establish some region-wide projects (like updating the regional sections of the 1993 Conservation Status and Action Plan). The network of WPSG in Africa was highly boosted and strengthened by a meeting that was organised by the group in October 2019. This meeting took place in the Makerere University Biological Field Station located inside Kibale National Park in south-western Uganda. The meeting was a two full day event that involved 30 people including participants from Uganda, Democratic Republic of the Congo, Mexico, USA, Netherlands, Belgium, Italy, Canada, Switzerland and England. These participants brought expertise from the following African countries: Uganda, Kenya, Tanzania, Ethiopia, Eritrea, Democratic Republic of Congo, Rwanda and Central African Republic, as well as partial knowledge of other African countries. The meeting was composed of nine talks, one mapping exercise, two general discussion sessions, one walk in the forest, one night walk, one artistic performance show by local people

and two slideshows featuring African terrestrial wildlife. In addition to the meeting, we have contacted researchers working in West Africa, a region for which we have lacked representatives for a long time. The young researcher Florian Codjia from Benin is in our group and has brought interesting information about Red River Hog from the country and from the region. These actions are considered only first steps toward a real network of researchers working with African Wild Pigs; we believe that there are still very few people, researchers and conservationists interested in these species.

#### T-023 (KSR 2)

**Number of WPSG members joining the symposium: 0**

**Result description:** WPSG members were informed about the symposium and invited to join if possible.

#### T-036 (KSR 1)

**Number of 'in kind' partnerships established and maintained: 1**

**Result description:** A new MoU (International Conservation Management and Research MoU) between the partners (Durrell Wildlife Conservation Trust; WPSG; Forest Department Government of Assam; Ministry of Environment and Forest, Government of India and local partners Aaranyak and EcoSystems-India) has been drawn up for five years for continuation of the Pygmy Hog Conservation Programme. The new MoU was submitted to the Government of India in 2019. However, it was not followed up on for two years during the COVID-19 pandemic restrictions. Very recently, Chief Wildlife of India sent a reminder to the Ministry of Environment, Forest and Climate Change, Government of India. Hence, this target is still in progress.

## COMMUNICATE

### Communication

#### T-010 (KSR 12)

**Number of Species e-bulletin, Save Our Species newsletter, SSC Groups' newsletter editions produced: 3**

**Result description:** *Suiform Soundings* is up to date, with two issues published per year, hence on track. Issues can be found at: <https://www.iucn-wpsg.org/>.

#### T-019 (KSR 13)

**Number of digital communication outputs developed in relation to specific taxonomic groups: 1**

**Result description:** The website is completed and will be continuously updated (<https://www.iucn-wpsg.org/>).

#### T-029 (KSR 12)

**Number of group update communications delivered: 2**

**Result description:** Many emails and updates were exchanged between certain groups of members (e.g. Philippines members) but not generic updates.

## Acknowledgements

Thank you to all WPSG members who actively contribute to the work of the WPSG, especially to the Regional Advisors, Red List Authority, ex situ and African Swine Fever experts, Suiform Soundings Chief Editor, and Social Media Officer. We would also like to thank the Species Conservation Foundation and Association of Zoological Gardens in 2021, as well as Cologne Zoo going forward into 2022, for providing the Chair with the time and space to work on WPSG activities. The collaboration with the IUCN SSC Asian Wild Cattle Specialist Group on terms of the Action Indonesia activities for the conservation of Babirusa has been superb.

## Summary of achievements

**Total number of targets 2021–2025: 39**

**Geographic regions:** 10 Global, 7 Africa, 21 Asia, 1 Europe

### Actions during 2021:

Assess: 12 (KSR 5, 6)

Plan: 3 (KSR 8)

Act: 10 (KSR 10)

Network: 5 (KSR 1, 2)

Communicate: 3 (KSR 12, 13)

### Overall achievement 2021–2025:

