

News

WELCOME TO OUR NEW SPECIALIST GROUP MEMBERS!

One of the key results of the IUCN Species Strategic Plan 2021–2025, which was approved at the IUCN World Conservation Congress, is to enhance the membership and the capacity of the SSC network and its alliances, with a focus on increasing diversity among SSC members. In this context, our Specialist Group's membership committee decided to prioritize the inclusion of members from under-represented countries until we have at least one member per range country. We would like to give a warm welcome to our new members from Bolivia, Chile, Costa Rica, French Guiana, Guyana, Honduras, and Uruguay. We would also like to take the opportunity to thank all existing members—both those who renewed their membership and those who decided to step down—for their enthusiasm and invaluable work. We are very much looking forward to working with all of you during this next quadrennium!

The IUCN Species Strategic Plan 2021-2025 is available at https://www.iucn.org/sites/dev/files/content/documents/iucn_species_strategic_plan_2021-2025_summary_1.pdf.

PARTNERSHIP WITH THE FOUNDATION FOR INTERNATIONAL AID TO ANIMALS (FIAA)



advocates wildlife conservation. Early on, FIAA understood the impact of feral animals on wildlife and

We are happy to announce that our Specialist Group has entered a partnership with the Foundation for International Aid to Animals (FIAA). FIAA is a private, non-profit organization based in New York City that promotes humane and responsible treatment and training of domestic animals and

supported educational programs, animal rescue, and population control operations for street dogs and cats. The institution then expanded its work to the conservation of wild species. For more than 20 years, FIAA has been developing and supporting wildlife management, rescue, rehabilitation, and reintroduction programs, cultivating collaborative efforts with partners and local groups on different continents.

Among others, FIAA will support the Anteater, Sloth and Armadillo Specialist Group's educational and awareness programs and conservation actions, including rescue and rehabilitation. We are looking forward to a fruitful collaboration between our Specialist Group and our partners FIAA and Nurtured by Nature!

If you would like to know more about FIAA, please visit **their website** at <https://www.aidtoanimals.org>.

TAXONOMY SUBCOMMITTEE

A taxonomy subcommittee of the ASASG has been constituted to perform the species taxonomy update to be used in the next IUCN Red List reassessment. Members of the subcommittee Frédéric Delsuc, Agustín Abba, Nadia Moraes-Barros, Maria-Clara Arteaga, Paul Smith, Mariella Superina, and Jim Loughry met virtually on June 30, 2021 to discuss and define the criteria they will use to evaluate newly proposed changes in xenarthran taxonomy.

Speciation being by essence a continuous and ongoing evolutionary process ultimately leading to the formation of new species from diverging populations, species delineation is particularly challenging. It is nevertheless vital for conservation biology to define practical evolutionarily significant units as populations of organisms that are considered distinct enough to assess their conservation status separately. Thanks to the developments of molecular genetic tools and their application in modern taxonomy, studies on species delineation proposing taxonomic changes in many taxa are flourishing. This underlines the crucial need to define objective criteria to accept or reject

proposed taxonomic changes. Xenarthrans are still currently understudied from this point of view but there have been recent updates and proposals for taxonomic changes that need to be assessed before designing conservation policies. The goal of the meeting was thus to develop a procedure for making decisions on acceptance or rejection of proposed taxonomic changes (*i.e.* description of new species, splitting or lumping of existing species, declaring a taxon invalid, nomenclatural changes). The subcommittee recognizes that an integrative approach is needed and should consider multiple lines of evidence (morphology, genetics, biogeography, behavior, ecology, etc.). However, it is rare that a single study contains all these multiple lines of evidence.

Therefore, after fruitful discussions, the taxonomy subcommittee proposes a list of criteria upon which it will base its decisions by weighting the available evidence for a given taxonomic change on a case-by-case basis. In the case of conflicting lines of evidence, the subcommittee will follow the suggestion of the IUCN Red List Unit to adopt a conservative approach (*i.e.* prevailing usage):

- Only formal taxonomic changes proposed in studies published in a peer-reviewed scientific journal and following the rules of the International Code of Zoological Nomenclature (ICZN: <https://www.iczn.org/the-code/the-code-online/>) will be considered.
- The subcommittee will evaluate the multiple lines of evidence provided in favor of the proposed taxonomic change in the given study and evaluate their respective strengths.
- The subcommittee will make sure that morpho-anatomical studies are based on properly deposited museum specimens and consider an adequate number of specimens representing the species geographical distribution, that must include the type locality.
- Studies based on geometric morphometrics will be assessed based on their respect of methodological standards for landmark definition and placements but also on the adequacy and significance of subsequent statistical analyses.
- Molecular studies of species delineation should ideally include analyses of both mitochondrial and nuclear markers for a representative sample of individuals covering the species distribution. As a minimum number of genes/markers could not be defined, the subcommittee members will assess the evidence provided in light of current practices in species delineation. This now mostly relies on complete mitochondrial genomes and multiple genome-wide nuclear markers obtained from reduced-genome representation methods (exon capture, UCEs,

Genotyping-By-Sequencing, RAD-seq) or low-coverage genome sequencing (SNPs). The committee will verify that the molecular data underlying such studies have been properly deposited in a dedicated sequence repository such as GenBank, the European Nucleotide Archive, or the DNA Data Bank of Japan (DDBJ) and are publicly available.

- In specific cases, the subcommittee might consult with an external taxonomic expert to help reach a final decision.

These criteria provide the guidelines to make a decision, but are by no means exhaustive, and the taxonomy subcommittee will assess every case based on its own merits. Each decision will be subjected to a majority vote within the taxonomy subcommittee, then communicated to the other ASASG members to collect their opinion. The taxonomy subcommittee will publish a final statement detailing the arguments for or against a proposed taxonomic change in support of its decision. These will be published on the ASASG website as part of the species description pages. Taxonomic notes will be used to this effect and will highlight weaknesses and missing data in the assessments, in order to clarify avenues of further study necessary to fill the gaps in our knowledge.

As most of the xenarthran chapters of the Handbook of the Mammals of the World Volume 8 were written by ASASG members, the new species assessments will use this publication as the baseline reference.

EDUCATION SUBCOMMITTEE

The Education/Outreach subcommittee, consisting of Tinka Plese, Diorene J. Smith Cabellos, Alessandra Bertassoni, Nadia Moraes-Barros, Adriana Aguilar Borbón and Monique Pool, met several times after the 2nd of March of this year. After several meetings in which Mariella Superina regularly participated, the subcommittee members agreed that Education/Outreach would focus on three topics:

1. Making the general public aware of xenarthrans and their conservation status.
2. Promoting international sloth day (third Saturday of October) and world anteater day (29 November) in xenarthran range countries.
3. Raising awareness about the Pygmy sloth through a Pygmy sloth website.

With a considerable effort by the members of the subcommittee, and with generous financial support from Nurtured by Nature, this website is now up and running.

In the meantime, Alessandra Bertassoni took the lead on creating the ASASG's *Instagram* account, introducing those members of the Specialist Group who provided a picture and a quote.

Looking ahead, the focus will be on making the general public aware of xenarthrans and their conservation status. The subcommittee hopes all Specialist Group members will support these activities, and others, as we move forward.

Pygmy sloth website: <https://pygmysloth.org> and <https://perezosopigmeo.org>

ASASG's *Instagram* account (@asag_2021): https://www.instagram.com/asag_2021/?hl=en

RE-ASSESSMENT OF ALL XENARTHRA FOR THE IUCN RED LIST OF THREATENED SPECIES

Our Specialist Group has initiated the re-assessment process of all Xenarthra for the IUCN Red List of Threatened Species. As suggested by our Taxonomy Subcommittee, we have started with the six sloth species. We will then continue with the anteaters, including the recently recognized new *Cyclopes* species. We hope to conclude the assessment of all Xenarthra by the end of 2022.

TERESA CRISTINA ANACLETO (1961–2021)

The IUCN SSC Anteater, Sloth and Armadillo Specialist Group deeply regrets the passing of professor and researcher **Teresa Cristina da Silveira Anacleto**, one of the great scientists in Brazil regarding the study of mammals. Teresa obtained a degree in Biological Sciences from the University of Guarulhos, a master's degree from the University of Brasilia on the ecology of the giant armadillo, and a doctorate from the Federal University of Goiás on the effects of anthropic actions, as well as the distribution and diet, of armadillos in the Cerrado.



She was a professor at Mato Grosso State University, Nova Xavantina campus, where she mentored several students in the graduate program in ecology and trained generations of researchers and scientists. She worked at the Mammal Laboratory and its regional collection until she passed away.

Teresa was one of Brazil's leading armadillo specialists, and one of the most respected experts at the international level. During her extensive career, she studied the taxonomy and ecology of *Priodontes* and *Cabassous*. Among many other relevant findings, she recently described a new *Cabassous* species. Teresa was also a key contributor to the National Action Plan for the Conservation of the three-banded armadillo, which aims to reduce the risk of extinction of *Tolypeutes tricinctus*, with the goal of eventually re-categorizing this species from Endangered to Vulnerable. The plan also seeks to adequately assess the conservation status of *Tolypeutes matacus* at the national level. Thanks to the efforts of Teresa and others the main conservation guidelines for the preservation of these emblematic species are now in place.

Throughout her years in research, Teresa made every effort to collaborate with other researchers, and often used her own resources to help students who were experiencing financial difficulties. Her career is emblematic of her affection and tireless dedication to academia, having embraced armadillos as the centerpiece of her efforts. Teresa will be deeply missed by all of us.

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FRANÇOIS CATZEFLIS (1953–2021)

François Catzefflis passed away on November 25th 2021 after a one-year battle with cancer.

As a Swiss citizen, François earned his B.S. in Natural Sciences in 1978, M.S. in Biology in 1981, and Ph.D. on the biochemical systematics of shrews in 1984 from the University of Lausanne (Switzerland). Following a post-doctorate at Yale University (USA) under the supervision of the late Prof. Charles G. Sibley, François first came to the University of Montpellier (France) in 1986 as a CNRS research associate at the Institut des Sciences de l'Evolution (ISEM). In 1988, he was appointed a tenured CNRS position as a full time researcher to bring his expertise on DNA-DNA hybridization and apply it to the phylogeny of rodents. At ISEM, where he spent his entire career, he founded the Molecular Phylogeny team and built his own lab in a newly dedicated building. François contributed to the early days of molecular phylogenetics in France by conveying his enthusiasm for molecular systematics, and instilling his typically Helvetic scientific rigor, to his



students. He participated actively in the molecular revolution of mammalian phylogeny with the publication of a number of seminal papers in the 1990s and 2000s, notably on the evolutionary relationships of cetartiodactyls, rodents, and xenarthrans. During this time he served as an associate editor for the journal *Molecular Phylogenetics and Evolution*, and later for *Mammalia*.

Early on his career, François recognized and advocated the importance of animal tissue collections for DNA analyses in molecular genetics and systematics. However, after a decade of mostly lab-based molecular work, François, as a passionate naturalist, started missing fieldwork. He first travelled to French Guiana in 1994 to sample animals, including many armadillos, anteaters and sloths that were rescued during the creation of the Petit-Saut dam on the Sinnamary river, which drowned 200 km² of pristine Amazonian rainforest. There, he directed the first Ph.D. project on the ecology and population genetics of marsupials, while also discovering the rainforest and its diverse fauna, spending hours, days, and weeks on improbable paths, almost always with his students, and often looking unsuccessfully for a way to get back to the basecamp...

But François literally fell in love with French Guiana, the Amazonian rainforest, and the conservation of its tremendous biodiversity. Making a big change to his career path, he spent the next

20 years conducting numerous fieldwork sessions to study the diversity of small mammals, primarily marsupials, rodents, and bats. He surveyed French Guiana from the most remote, pristine forest areas to coastal savannas, from inselbergs to Amerindian settlements, sharing with equal enthusiasm food rations with the French army, and a traditional fermented cassava drink with Amerindian shamans. His countless efforts resulted in an unprecedented collection of thousands of tissue samples and hundreds of mammal specimens that are now hosted in international museums of natural history, for instance, in Paris and Geneva. François also inspired the creation of the JAGUARS tissue collection (<http://kwata.net/la-collection-jaguars-pour-l-etude-de-la-biodiversite.html>) hosted at the Institut Pasteur de la Guyane, an invaluable resource for genetic studies of mammals in the Guiana Shield.

His fieldwork helped in evaluating the impact of habitat fragmentation by road construction, based on roadkill surveys, the impact of hunting by surveying hunting tables in different local communities, and, thanks to fruitful collaborations with the Institut Pasteur de la Guyane and Cayenne Hospital, the role of small mammals as potential reservoirs of diseases in native Amerindian villages along the Oyapock and Maroni rivers. His work also led to new species discoveries, such as a tiny opossum of the genus *Cryptonanus*, first observed in barn owl pellets that François meticulously collected and examined. A living specimen was later captured alive in the savannas near the town of Sinnamary. Also, genome-wide species delimitation and morphological analyses recently confirmed a new species of long-nosed armadillo (genus *Dasypus*) restricted to the Guiana shield, which was initially identified thanks to samples brought back by François from Petit-Saut to Montpellier. Both new species are still in the process of being formally described but François actively contributed to the latest assessment of the IUCN Red List of the vertebrate fauna of French Guiana in 2017, in which they are included. His extensive knowledge went beyond French Guiana borders, with missions and students training in Amapá and Amazonas in Brazil, and in Venezuela. His scientific legacy will last for many years because of the reference xenarthran genomes that have been sequenced from tissues he collected over the years in French Guiana.

Alongside science, François also dedicated time to the public dissemination of scientific knowledge, and his last achievement was the nicely illustrated book *Marsupiaux et rongeurs de Guyane*, which shed welcome light on this cryptic and so often neglected fauna. In 2005, he extended his research to the French West Indies, and more specifically Martinique, where he significantly contributed to the knowledge and protection of insular mammals

such as the *manikou* (*Didelphis marsupialis*). Finally, in parallel with his scientific career, François was also an avid environmental activist at Greenpeace France, vigorously combating illegal wood importation in France, overfishing in the Mediterranean Sea, and illegal gold mining in French Guiana. He also successfully contested overzealous petrol prospecting and mining projects by national and international corporations in French Guiana. As in science, his commitment to protect the natural environment was truly exemplary and inspirational.

François is survived by his dear wife Chantal and their three children, and his beloved two-year old grandchild Akine. He will be sorely missed by his family, friends, and colleagues.

The picture on the previous page shows François measuring a long-furred woolly mouse opossum (*Marmosa demerarae*) during one of his last fieldwork sessions in French Guiana, at “savane Roche Annabelle” in 2015. This was a joint small mammals survey with researchers and students from Macapá (Amapá) and Manaus (Amazonas) in Brazil and Institut Pasteur de la Guyane and Kwata NGO in French Guiana.

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UPDATE ON THE PYGMY SLOTH CONSERVATION PROJECT

The Pygmy Sloth Conservation Project held a workshop called “Key Contributions for the Pygmy Sloth Conservation Plan”. It was attended by authorities from the Panamanian Ministry of Environment, members of the communities near Escudo de Veraguas Island, authorities from the Ngäbe-Buglé region, representatives of non-profit organizations, and other governmental institutions.

The overall objective of the workshop was to highlight the importance of pygmy sloth conservation and develop alternative strategies for the integrated management of Escudo de Veraguas Island, based on information provided by key stakeholders in previous workshops. The threats faced by the pygmy sloth were identified and prioritized, alternatives to mitigate these threats were discussed, and key actors were identified to carry out short and long-term actions.

The information generated in this workshop is the first step in the consensual validation process of the Pygmy Sloth Conservation Plan, which will ultimately take into account the perceptions and contributions of the Ngäbe community, other main users of Escudo de Veraguas Island, and the guarantors of the island's conservation. We thank the Zoological Society of London, Disney Conservation Fund, and Nurtured by Nature for their support.

