An Interview With…
Gérard Rocamora

Gérard Rocamora is *Docteur-Ingénieur en Agronomie* having specialized in ecology (*ENSAM-Université des Sciences et Techniques du Languedoc, Montpellier* and *Universitat de Barcelona, 1987*). He has worked in Europe, Africa, tropical America and the western Indian Ocean as an ornithologist and also as an invasive species expert with organizations such as BirdLife International, Conservation International and Critical Ecosystem Partnership Fund, and government institutions including the Seychelles Ministry of Environment and the French administration in Mayotte.

With origins in Catalonia and France, since 1995 he has lived with his wife and two daughters in Seychelles, where he acquired citizenship. He has been closely involved with initiatives focused on threatened species recovery and island rehabilitation programmes, ecosystem monitoring and seabird studies, many of which involved invasive species management. Over the years, he has led or contributed to more than 25 different invasive species management programmes, including 14 successful rat eradications on islands, and 9 conservation introductions of rare and threatened species on islands. Affiliated for many years with the *Muséum national d'histoire naturelle* in Paris, he is a member of three specialist groups (Invasive Species Specialist Group, Reintroduction Specialist Group, Red-data List group) of the Species Survival Commission of the International Union for the Conservation of Nature.

Since 2013 he has been a part-time lecturer for the Environmental Sciences BSc programme in the Faculty of Business and Sustainable Development at the University of Seychelles (UniSey) and, since 2005, a regular supervisor of Masters and PhD students, as well as an environmental adviser for private islands and companies. He is also the founding chairman of the Island Biodiversity and Conservation centre at UniSey, and a co-founder of the Island Conservation Society.

Dr Rocamora has authored or co-authored about 80 scientific and technical publications on wildlife, including several books and chapters on threatened species and priority sites for conservation, 40 peer-reviewed scientific papers, and several wildlife audio sound guides, plus many valuable technical reports.

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Gérard Rocamora was interviewed by Dr Jérôme Harlay who is a Senior Lecturer in Environmental Science at the University of Seychelles, specializing in oceanography.

Gérard Rocamora (GR)
Jérôme Harlay (JH)

JH: What are your scientific interests? Do you have any mentors that inspired you?

GR: I am interested in the ecology and the conservation of rare and threatened species, especially birds as ornithology is my background. I am also interested, on a broader scale, in the rehabilitation of island ecosystems. My initial mission in Seychelles was focused on monitoring and conservation of threatened birds and their habitats but I ended up also becoming an expert in invasive species, particularly in eradication and management of rodents.

One of the most important things that I learnt after being in Seychelles for a couple of years is the importance of the negative impact of invasive species, and particularly rodents, on native species and ecosystems. Many of the rare Seychelles endemic birds, reptiles and invertebrates cannot live in the presence of introduced rats and cats and have nowhere else to go apart from a handful of islands free of these predators, and where native vegetation still prevails. This shows that we need to focus on the quality of habitats at the same time as managing these relictual endemic species. In this respect, I also realised the importance of small islands, with the examples of Aride and Cousin, that were bought, protected and rehabilitated back in the 1970s by two NGOs (today Royal Society of Wildlife Trusts and BirdLife International). It became very clear that, in order to save these rare endemic species from extinction, we needed to restore more of these small islands to create sanctuaries where ecological conditions could be relatively similar to the ones that prevailed before humans arrived in Seychelles. Compared to large islands, there are techniques available to eradicate invasive rats and cats on small islands and to prevent re-invasion by these or other invasive species, and because of their small size it is feasible to restore, or at least rehabilitate, much of their natural habitat. Therefore, I decided to focus on what can be defined as 'island conservation' activities, that encompass techniques developed through practical experience and scientific research to rehabilitate island ecosystems. This consists of eradicating or controlling invasive predators, removing invasive plants, replanting of native trees, and (re)introducing rare endemic animals and other native species. This helps in recreating ecological networks and biological processes, such as seed dispersal, that are key for the successful rehabilitation of the ecosystem in the long-term. There has been in existence, since the early 2000s, an NGO based in US called 'Island Conservation' that promotes such practices around the world.

In terms of mentors, I can think about several conservationists and scientists that have inspired my actions since I was young. The protection of birds and wildlife in general has always been my passion. Although my father used to trap birds and taught me from a very young age how to do so, I joined, when I was ten, a '*Club des jeunes amis des animaux*' in my village, inspired by the television broadcasts of Allain Bougrain-Dubourg, today the president of *Ligue pour la Protection des Oiseaux* (BirdLife in France) and who became, twenty years later, a close friend. At 12, I founded a '*Club des amis de la*

nature' at Lattes secondary school, and at 18 a dozen bird enthusiasts, including myself, created in Montpellier the GRIVE '*Groupe de Recherche et d'Information sur les Vertébrés et leur Environnement*' that became quickly a leading regional NGO. While studying in the early 1980s at the *Faculté des Sciences* and at the *Ecole Nationale Supérieure Agronomique de Montpellier*, I met Dr Jacques Blondel, a leading scientist and ornithologist, and I decided to make every attempt to persuade him to accept me as his PhD student, which he agreed to do after I had obtained my Master's degree. After arriving in Seychelles, I met Professor Carl Jones, a Durrell Foundation conservation scientist and Scientific Director of the Mauritius Wildlife Foundation, and later Dr Don Merton, a conservation scientist from the Department of Conservation of the New Zealand government. These two outstanding conservation practitioners had led the recovery of several threatened species that were saved from extinction as a result, and the latter was the pioneer and world leader in the eradication of rodents and cats on islands. I later developed close professional and personal relationships with both, and they are the two people that have most inspired my work in Seychelles. In 2007, I also met, at a conference on invasive rodents in Hawaii, Professor Dan Simberloff, a leading US scientist in both island biogeography and biological invasions, and board member of the international NGO Island Conservation. His impressive academic work is also a great inspiration to many; and he later agreed to write the foreword of our book 'Invasive Alien Species in Seychelles'.

JH: What brought you to Seychelles and then what led you to your present activities?

GR: I was formerly Head of the Research Department of the *Ligue pour la Protection des Oiseaux* (BirdLife in France), and in 1995 I was seconded by BirdLife International to the Seychelles Ministry of Environment. Previously, I had the opportunity to work in ornithology, forestry and as a university lecturer in Europe (Catalonia, Corsica, continental France), North Africa (Tunisia), and South America (French Guiana). I was already working on the conservation of rare and threatened species (Corncrake *Crex crex*, Bonelli's eagle *Aquila fasciata*) and on waterbirds and seabirds.

For my first two and a half years in Seychelles, I worked on the monitoring of populations and habitats of rare endemic birds like the Seychelles Black Paradise Flycatcher (*Terpsiphone corvina*), the Seychelles Scops-owl (*Otus insularis*), the Seychelles Fody (*Foudia sechellarum*) etc., but as there was one species that appeared to be the rarest at that time, the Seychelles White-eye (*Zosterops modestus*), I proposed, in 1998, to the Ministry of Environment to start the 'Seychelles White-eye Recovery Programme'. This was after the presence of a healthy population was discovered on Conception Island. For a few years, and together with my MoE team, I focused on studying the ecology of this species and identifying the factors limiting its development – which turned out to be mainly the presence of black rats (*Rattus rattus*) – and in 2001 we conducted the first conservation introduction of this species to Frégate Island, where rats had been eradicated the year before. During this time I built and trained a team of Seychellois technicians and scientists, such as Selby Remie, Perley Constance, Roland Nolin, Joseph Francois, Pierre-Andre Adam, Elvina Henriette, Andre Labiche and Wilna Accouche,

among others, many of whom have gone on to make a career in conservation and continue to collaborate with my projects.
From 1998 to 2002, I worked as a consultant for the Ministry of Environment, and later also for private islands and NGOs. In 2001, together with Professor Rolph Payet, former Vice-Chancellor of the University of Seychelles, and two other colleagues, we founded the Island Conservation Society (ICS) that has now become the largest environmental NGO in Seychelles. During this time, I was also working in Mayotte on birds and invasive rodents, focusing on the island's most remarkable habitats (natural forests, mangroves, wetland and small islands). I was also preparing the chapter on Drongos (*Dicruridae*) for the 'Handbook of Birds of the World' (Rocamora and Yeatman-Berthelot, 2009) and worked on Aldabra on the Aldabra Drongo (*Dicrurus aldabranus*), and on other drongos of the region such as the Mayotte Drongo (*Dicrurus waldenii*), which took me to visit Madagascar and Comoros.

Between 2004 and 2009, I prepared and led a €1.5M project with ICS called 'Rehabilitation of island ecosystems' co-funded by the French GEF (*Fond Français pour l'Environnement Mondial*). This project was very successful in removing invasive rats and cats from several islands, including Anonyme island, Ile du Nord (*North Island*), Conception and three more islands of the Cosmoledo atoll. This doubled the area without rats and cats in the granitic Seychelles. We also conducted island translocations of Seychelles White-eyes, black terrapins (*Pelusios subniger*) and Seychelles Leaf-insects (*Phyllum bioculatum*), and together with the Plant Conservation Action group, we helped North Island Ltd. to produce their first vegetation management plan and to rehabilitate 40 ha of natural habitats. Many resident staff were trained through short courses and in-the-field training.

In 2010, Professor Rolph Payet invited me to be part of the Academic Committee of the newly formed University of Seychelles in order to help build curricula in environmental sciences, starting with a BSc for which I lectured on birds and on invasive species, and still continue today. I then proposed creating an NGO associated with the University of Seychelles: 'Island Biodiversity and Conservation' (IBC), in the form of a centre located at the Anse Royale campus. Formed in December 2014, the IBC has the mission 'to promote, within the University of Seychelles, scientific studies and ecological research on island biodiversity and conservation programmes, the dissemination of research obtained and the development of curricula and local capacity'.

JH: What is the main contribution of the IBC to biodiversity conservation in Seychelles and to UniSey?

GR: The IBC is involved with several conservation and research projects on threatened species of landbirds, reptiles and amphibians, plant ecology and taxonomy, wildlife health, seabird ecology, and invasive rodents. It has employed several former BSc students of UniSey as well as local conservationists. Firstly, the IBC center is located on UniSey's campus. We have a dozen members, comprising resident core members (independent scientists/practitioners and UniSey lecturers), and associate members from foreign universities or local NGOs co-affiliated to the UniSey IBC centre. Since the IBC

was formed, we have contributed to twenty publications including nineteen scientific peer-reviewed articles and one book (https://unisey.ac.sc/island-biodiversity-conservation-centre/publications/). IBC core members, such are Dr Bruno Senterre, Dr Elvina Henriette and myself, have been leading one third of these publications. This contributes to the production of good quality science by UniSey. I also teach the course 'Tropical Biodiversity and Conservation' on the BSc Environmental Science programme, and, with other IBC members the 'Introduction to Field Studies and Geoinformatics for Environmental Science'.

Early in 2016, IBC launched the book Invasive Alien Species in Seychelles (Rocamora and Henriette, 2015), published by the *Museum national d'histoire naturelle de Paris* (MNHN) and Biotope Editions. This book – and the Seychelles experience in managing invasive species that it describes – has been acknowledged as a significant contribution by various scientists and practitioners working in biological invasions around the world and serves as a support for my teaching at UniSey (see further information).

In the same year, IBC obtained its first grant ($152,500 US) from an international donor, the Critical Ecosystem Partnership Fund (CEPF), to implement Phase 1 of the project: 'Advancing Environmental Management Practices and Threatened Species Recovery through Partnerships'. With substantial co-funding from local partners, including Sisters Ltd, Château-de-Feuilles hotel and Sainte Anne Resort, this project led to the creation of a new island population for the vulnerable Seychelles White-eye and the reinforcement of the Giant Tortoise population on Grande Soeur, as well as the re-introduction with ICS of Giant Tortoises on Aride island nature reserve. This was done following extensive habitat suitability measurements of vegetation and invertebrate diversity, as well as close post-released species monitoring. Two nurseries of native trees were created, one at the Anse Royale campus of UniSey and one on Grande Soeur, and some habitat restoration was conducted with the re-planting of a thousand trees in Seychelles White-eye territories on both Mahé and Grande Soeur. On the invasive species front, rat densities were measured and a pest-management plan was produced for La Misère and other White-eye breeding areas; surveys were conducted on Sainte Anne the Crested tree lizard (*Calotes versicolor*) was declared eradicated; and biosecurity protocols were established and implemented for Grande Soeur and Sainte Anne islands (see poster). The projects provided field training for 62 local staff and foreign volunteers. Two training courses for a dozen participants each – one on bird ringing and one on pesticide handling and applying, and activities such as tree planting at La Misère or Grande Soeur, guided walks on Sainte Anne, and various presentations, were organized with school children, UniSey students and local volunteers to sensitize local communities (see poster).

Seychelles is a world leader in wildlife conservation and has a great record of conservation successes. These are mainly due to close partnerships established between its NGOs, the private sector (owners and managers of private islands, corporate sponsors) and governmental or parastatal institutions. I think that UniSey should become much more involved in wildlife conservation and research to build upon the existing massive achievements and to become one of the centres of excellence for wildlife

conservation in the Indian Ocean. This is my vision and I hope that Island Biodiversity and Conservation can help reach this objective.

JH: Do you see yourself primarily as a researcher or an applied scientist?

GR: I see myself primarily as a conservation biologist and practitioner, and therefore as an applied scientist. This means that my work is oriented towards obtaining tangible results in the field, although good quality science is, of course, essential to guide conservation action, which means research is often required on certain aspects. For example, we need applied research to define the status of the native species we want to protect and also of the invasive species that threaten them. So we regularly use wildlife census techniques such as Capture-Mark-Recapture models to determine the population size of particular birds in their island strongholds, or to measure rat densities to later evaluate the effectiveness of particular eradication or control techniques on these invasive animals.

However, although much of my work is oriented towards conservation practice, myself and other collaborators from the UniSey IBC centre contribute regularly as authors or co-authors to scientific publications including peer-reviewed articles, conference proceedings, book chapters or even entire books.

I also contribute to academic mentoring by supervising or co-supervising PhD students and MSc students working in Seychelles, and being a member of PhD committees. Among my former PhD students, Dr Elvina Henriette, a Seychellois conservation biologist with a PhD from the *Museum national d'histoire naturelle* (Paris), continues to be one of my close collaborators and is also a founding member of the IBC. The subjects of these students conducting applied research vary from estimating population sizes and trends of species of conservation concern, monitoring the establishment of translocated populations of rare birds or giant tortoises, studying their behaviour, breeding success and geographic expansion, evaluating the impact of the eradication of invasive rats and cats in islands, or studying the foraging ecology and dispersion of seabirds at sea.

JH: What do you consider your best practical achievements, and what are the writings you are most proud of?

GR: To have led the eradication of rats and other introduced predators and competitors, as well as the reintroduction of rare endemic species on a number of islands, is by far the most rewarding practical achievement I can think of. It gives me a great feeling of satisfaction when I walk across islands where we have removed these invasive animals and I see the amazing wildlife that has spontaneously recolonized or that we have successfully (re)introduced.

One of my problems is that I have not been able to publish all the results from the many studies and conservation achievements due to lack of time and collaborators. But if we speak of practical achievements, I feel that the recovery of species and ecosystems is, by far, more important than any publication. Scientific research is only a by-product of my

activity as a conservation scientist. My passion for nature conservation has always been stronger than my interest for academic writing. Nevertheless, it is essential that high quality science guides conservation action and therefore we also need to contribute to knowledge and disseminate our findings.

It is difficult to select publications that I think are more important than others, but it is probably the books or book chapters that I have authored or co-authored. Books, and especially those that deal with scientific subjects, require huge dedication and countless hours of work. Not only for writing the texts but for all the numerous consultations, reviews, corrections and cross-checks (text, figures, tables, illustrations, legends, bibliography, etc.) required to make it as complete and perfect as you can. A lot of money is needed to publish a book so before you embark on writing one you need to ensure that sufficient funds will be available to produce it, including, if possible, funds to pay for your own work. However, you often end up dedicating many unpaid evenings, week-ends and holidays. I like to compare the preparation of a book as a 'gestation' period, sometimes taking up to 3 to 4 years! Apart from our last book 'Invasive Alien Species in Seychelles' (Rocamora and Henriette, 2015), I think that the first inventories of Important Bird Areas in France, *Les Zones Importantes pour la Conservation des Oiseaux en France* (Rocamora, 1994); and in Seychelles, 'Important Bird Areas in Africa and Associated Islands – Seychelles' chapter (Rocamora and Skerrett, 2001); as well as '*Oiseaux menacés et a surveiller en France*', red data book for birds in France (Rocamora and Yeatman-Berthelot, 1999), have been key baseline publications that have helped to develop conservation action to preserve birds of international or global conservation concern in both countries. At global level, it was quite challenging to publish our chapter on Drongos *(Dicruridae)*, (Rocamora and Yeatman-Berthelot, 2009) in the Handbook of Birds of the World, a major world reference in ornithology, published by Lynx Edicions and BirdLife International. It was also a satisfaction to contribute to the last volume of 'The Birds of Africa: the Malagasy region' (Safford and Hawkins, 2013) where I authored or co-authored the text accounts of the majority of the Seychelles endemic birds.

Some scientific papers, although not outstanding with regards to the science that is behind them, may be important simply because they are amongst the very few that exist on particular species or areas. This is the case for example of a scientific paper a few of us wrote on the seabirds of Cosmoledo atoll following the first expedition of ornithologists on this atoll during the South-East monsoon (Rocamora et al., 2001). Another interesting paper is the one we produced some time ago on the differentiation of Seychelles White-eye populations (Rocamora and Richardson, 2003), which combines genetic studies and morphological measurements. Other rewarding papers are also those that are related to themes for which little data is available, such as on the impact of eradication of invasive species and the subsequent recovery of species and ecosystems, one of my areas of interest (see for example Jones et al., 2016; Brooke et al., 2018).

Beyond the production of scientific literature, it is also very important to develop public awareness through popular articles in magazines and newspapers and nowadays through internet posts, something I have tried to do occasionally. I have also produced several

audio guides (CDs and booklets), including 'An illistrated sound-guide of garden birds' for Europe (Rocamora, 1996) which was awarded *Grand Prix International du disque de l'Académie Charles Cros* and reached 20,000 sales; and 'Sounds of Seychelles – Fauna and natural atmospheres of the granitic islands' (Rocamora et al., 2000) that reached 7,000 sales). These are useful tools for students, visiting ornithologists and wildlife enthousiasts, and for the general public to learn how to recognise and detect wildlife species.

JH: Do you work closely with the government and other organizations?

GR: Myself and other IBC members work with a great variety of partners, be it governmental institutions such as the Ministry of Environment, Energy and Climate change; the Natural History Museum and its Herbarium; and parastatals such as the National Seychelles Park Authority; environmental NGOs, such as the Island Conservation Society and its partners the Island Development company; Silhouette Labriz Hilton Resort, Alphonse Island Lodge; private island owners and managers of Grande Soeur, Frégate Island, North Island, Conception and Sainte Anne Islands, and hotels that operate on these islands; and also the Management of the President of United Arab Emirates properties, where the last Mahé Seychelles white-eyes survive at La Misère. We have historical links and close working relationships with all these partners. These partners therefore have a link with the University of Seychelles through the IBC.

With regards to partnerships in applied research, I have developed over the years collaborations with foreign institutions such as the University of Trier in Germany to study Seychelles orthoptera, the University of Auckland in New Zealand to investigate the biology of rodents and aspects related to their control, and with the *Centre National de la Recherche Scientifique* (*Centre d'Etudes Biologiques de Chizé*) in France to study seabirds. In 2019, we established collaborations and data-sharing agreements with the ICS, the University of La Réunion, and the Zoological Society of London for the study of Red-footed boobies on Farquhar atoll. I also like to establish bridges and collaborations with other disciplines and institutions to conduct research on invasive species that have also implications in public health, such as mosquitoes and invasive rodents, that are a serious problem for both humans and wildlife! Since 2008, I have been collaborating with our Ministry of Health (MoH) and the Seychelles Veterinary Department (now part of the National Biosecurity Agency), first to update the inventory of the species of mosquitoes present in Seychelles and, since 2011, to investigate rodents and leptospirosis, the most deadly infectious disease we have in Seychelles, together with the *Institut de Recherche pour le Development* and the Université of La Réunion. As part of this collaboration, a Seychellois microbiologist from the MoH has led the production of several collaborative scientific papers (see for example Biscornet, 2018) and he will defend his PhD in 2020. Combining ecological and public health aspects, this type of research, sometimes referred as 'Health Ecology', is increasingly becoming a focus of interest; this is something we should try to develop at the University of Seychelles together with our local and regional partners.

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