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Alfred Crossley and Alfred Grandidier: an enduring mystery of early natural history collecting in Madagascar

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ABSTRACT

During the mid-nineteenth century the English naturalist Alfred Crossley and the French geographer Alfred Grandidier both made seminal contributions to our knowledge of the natural history of Madagascar. But while Grandidier published voluminously on the island's geography, ethnography, and fauna, Crossley has been almost completely written out of the record. Indeed, apart from the few original specimen labels that have survived, much of the little we do know about him and his itineraries in Madagascar (key to the utility of his extensive collections) comes from the scattered hints in Grandidier's publications and private notebooks summarized here. Even the nature of the relationship between the two naturalists, and the length of their acquaintance, remain obscure. In early 1870 Grandidier published new primate and bird species from the "forêts est d'Antsihanaka" on the basis of specimens lately obtained by Crossley somewhere southeast of Lake Alaotra; but although a close reading of Grandidier's unpublished private journals indicates that both naturalists had been in very close proximity in the Alaotra basin in mid-October of 1969, it appears that they did not actually encounter each other there, and it remains a mystery how and under what circumstances Grandidier obtained Crossley's Antsihanaka specimens – which, tragically, were almost certainly lost soon thereafter in a warehouse fire in Réunion. Evidence exists that Grandidier respected the latter's unique and extensive Madagascar knowledge and experience and subsequently sought Crossley's advice. But it seems that ultimately the social barriers that separated the wealthy Grandidier from the impecunious Crossley precluded a potentially fruitful working relationship – and left the latter an important but frustratingly spectral figure in the history of natural history collecting and in the biogeography of Madagascar.

RÉSUMÉ

Au milieu du XIX[e] siècle, le géographe français Alfred Grandidier et le naturaliste anglais Alfred Crossley ont tous deux apporté des contributions déterminantes à notre connaissance de l'histoire naturelle de Madagascar. Mais alors que Grandidier publiait abondamment sur la géographie, l'ethnographie et la faune de l'île, Crossley a été presque complètement effacé des archives. En effet, à l'exception des quelques notes sur des spécimens qui ont survécu, la plupart du peu que nous savons de lui et de ses itinéraires à Madagascar (clé de l'utilité de ses vastes collections) provient d'allusions éparpillées dans les publications et les carnets privés de Grandidier résumées ici. Les commentaires publiés par Grandidier suggèrent que Crossley a peut-être travaillé comme collectionneur à Madagascar dès 1865, bien qu'il n'y ait aucune preuve solide de cela avant 1869. De même, la documentation de Grandidier sur les voyages de Crossley cesse après 1872, même si l'on sait que les deux hommes se sont rencontrés aussi tard qu'en 1876, l'année précédant la mort du naturaliste anglais à Madagascar. La nature de la relation entre les deux naturalistes reste aussi obscure que la durée de leur connaissance. Au début de 1870, Grandidier publia de nouvelles espèces de primates et d'oiseaux (dont *Cheirogaleus crossleyi* et *Bernieria crossleyi*) des « forêts est d'Antsihanaka » sur la base de spécimens récemment obtenus par Crossley quelque part au sud-est du lac Alaotra ; mais bien qu'une lecture attentive des journaux privés non publiés de Grandidier indique que les deux naturalistes avaient été très proches dans le bassin de l'Alaotra à la mi-octobre 1969, il semble qu'ils ne se soient pas réellement rencontrés là-bas, et il reste un mystère comment et dans quelles circonstances Grandidier a obtenu les spécimens d'Antsihanaka de Crossley—spécimens qui, tragiquement, ont presque certainement été perdus peu de temps après dans l'incendie d'un entrepôt à La Réunion. Il existe des preuves que Grandidier respectait les connaissances et l'expérience uniques et étendues de Crossley à Madagascar, et qu'il a par la suite demandé ses conseils. Cependant, il semble qu'en fin

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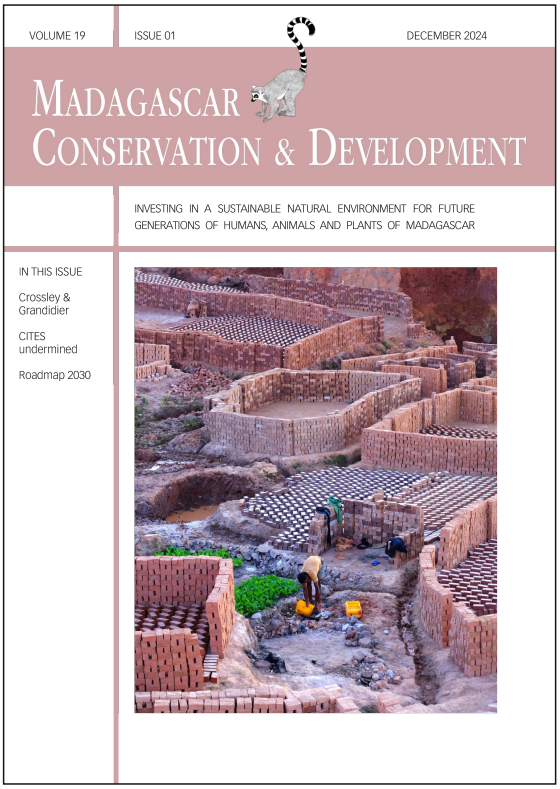

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de compte, les barrières sociales qui séparaient le riche Grandidier de l'impécunieux Crossley ont empêché une relation de travail potentiellement fructueuse – et ont fait de ce dernier une figure importante mais spectrale dans l'histoire de l'histoire naturelle et dans la biogéographie de Madagascar.

INTRODUCTION

Madagascar has for centuries been known for the uniqueness and rich diversity of its animal and plant life. It is, as Alison Jolly once luminously put it, "an island, a continent, a world, complete in itself … that tells us which rules would still hold true if time had once broken its banks and flowed to the present down a different channel" (Jolly 1980, p. xiii). Despite this singularity, systematic natural history collecting began in Madagascar only during the 1860s, thanks both to a long-awaited political opening to the outer world and to the efforts of several pioneering naturalists. The Dutch explorers François Pollen and Casparus Van Dam collected in the island's northwest between November 1863 and July 1866 (and the latter in the western region in 1869 and 1870); the French geographer and naturalist Alfred Grandidier conducted three visits to the east, south, west and center of Madagascar between 1865 and 1870; and the English collector Alfred Crossley made several journeys to the island between 1869 (or perhaps earlier) and 1877.

The uncertainty over Crossley's Madagascar dates stems from several factors (Tattersall 2022). It is known from an obituary published in his hometown of Halifax, in Yorkshire, that the naturalist's first foray to the island was involuntary, the result of a shipwreck that most likely occurred in the late 1850s and was followed by two years of probable enslavement (Anon. 1877) during the final, most xenophobic, years of Queen Ranavalona I's rule. Crossley's next documented activities in Madagascar, in the role of professional natural history collector at a time when foreigners had been readmitted, are first definitely recorded in 1869 (but might have been begun as early as 1865); and several other visits followed before his death at Tamatave on February 28, 1877, at the age of 37. His expeditions yielded a significant bounty of specimens, many of which are housed today in major European natural history museums (most notably those in London, Paris, and Leiden), though much of what he collected was sold privately and is probably now lost. The Crossley collections include numerous holotypes, several of which were named after their finder; but to the great detriment of science almost all of Crossley's specimens were dispersed through dealers who appear to have negligently discarded much, or even all, of the documentation that the collector apparently routinely furnished along with them (the few exceptions ironically going directly to a sponsor who also neglected to record their localities).

Crossley's involvement with commercial dealers contrasted with the prestigious institutional affiliations of the other early Madagascar collectors, and seems to have been largely the result of his chronically impecunious circumstances and lowly social status: attributes that also explain, at least in part, why he attracted so little personal, bureaucratic, or scientific attention during his extensive travels, even as he was making a long string of scientifically significant discoveries (Tattersall 2022). Biologists such as the British Museum (BMNH) ornithologist Richard Bowdler Sharpe were happy to describe Crossley's specimens, and at one point Sharpe (1875, p. 70) enthused that the Yorkshireman's "investigations in the wonderful island of Madagascar will forever connect his name with the natural history of that part of the world." But a mere four years later a curt reference to "the late Mr Crossley" (Sharpe 1879: 177) sufficed as a belated announcement to science that it had lost an exceptional naturalist. Sadly, although Crossley apparently kept extensive collecting records that we glimpse in Sharpe's brief but frequent allusions to them, no field notes have survived; and the naturalist published nothing during his short career. Without formal education he evidently lacked both the confidence and the social standing to publish, and a very unassuming personal disposition (Anon. 1877) probably also contributed to his reticence. As a result, a large stock of irreplaceable knowledge doubtless died with him.

ALFRED CROSSLEY AND ALFRED GRANDIDIER

Apart from his poorly documented collections, and Sharpe's brief references to his activities, our main source of published information on Alfred Crossley's travels in Madagascar is his French contemporary Alfred Grandidier, a wealthy Correspondent of the Muséum national d'Histoire naturelle (MNHN) in Paris. Grandidier traveled in various regions of the island in the same broad time frame as Crossley, collecting natural history specimens along the way with the "aim of assembling long series of all the animals of Madagascar" (Grandidier 1885, p. iii) for ultimate donation to the MNHN. His collections now form the backbone of the MNHN's Madagascar faunal and ethnological holdings, although but for circumstance they might be more extensive. Faure et al. (2019) report that when Grandidier left Madagascar (for what would turn out to be the last time) in late August 1870 (via the Seychelles, instead of via Réunion as anticipated, because of the outbreak of the Franco-Prussian War), he found himself obliged to abandon much of the collection he had amassed during his third Madagascar visit and had temporarily deposited at Réunion's St Denis Museum. Before they could be sent on to France, those specimens were destroyed in a fire. Undeterred, Grandidier subsequently devoted much of the rest of his life to producing his *Histoire Physique, Naturelle et Politique de Madagascar*, a lavishly illustrated multi-volume series on the island's history, geography, ethnology and natural history. This astonishing work is truly his monument, and it eloquently explains why, a century and a half later, his name remains synonymous with the natural history of Madagascar.

In an 1892 revision of the *Géographie* volume of the *Histoire* (Vol. 1: Grandidier 1885, confusingly issued after several other volumes of the series had already been published), the French naturalist supplied a long but evidently incomplete list of the itineraries followed by visitors to Madagascar between the late sixteenth century and 1890. Among those itineraries, he recorded that Alfred Crossley made several journeys in diverse regions of the island between 1869 and 1872. The first of those forays began in the far northeast, presumably at the port of Vohémar (although Crossley and Grandidier also used the name Vohima/Vouhima to refer to the extensive former Province that was governed from the town), and continued south along the east coast before cutting across the Masoala Peninsula to Maroantsetra, at the head of the Baie d'Antongil. Later in 1869 Crossley went from somewhere around Fénérive (Fenoarivo), via the principal port of Tamatave, to the "Pays d'Antsihanaka," the region around Lake Alaotra occupied by the Sihanaka cultural group. In 1870 Grandidier had Crossley journeying from Antsihanaka to the "Pays d'Imerina" around the capital city of Antananarivo, and in 1871 from Maroantsetra inland to Mandritsara, then south to Antsihanaka. Finally, in 1872, Grandidier records that Crossley traveled south from

Tamatave to Mahanoro and Mananjary, thence continuing inland to Ambohimanga Atsimo and Ambohimitombo before later traveling from Ankavandra to Mahajanga. See Figure 1 for a map of known Crossley localities in Madagascar. It may be relevant to note that at this period all travel inside Madagascar was on foot, in a palanquin, or by canoe.

The Crossley itineraries cited by Grandidier seem to be accurate as far as they go (Tattersall 2022). But they are very clearly incomplete, even for the years indicated; and the French naturalist records nothing for Crossley after 1872, even though we know beyond doubt that the latter made an important visit to Madagascar in 1874–5 and an ill-fated final one in 1876–7, and Grandidier elsewhere suggests that Crossley had been collecting in Madagascar well before 1869. To complicate matters, it remains uncertain how Grandidier got his information about Crossley, or indeed even whether there was any direct contact between the two naturalists before 1876. A letter (in French) from Grandidier to Richard Bowdler Sharpe is dated 30 July 1875 and requests news of the English collector, the strong implication being that the English and French Madagascar explorers had already interacted at some point, but that by 1875 contact had been at least temporarily lost. Grandidier's interest in Crossley in 1875 was almost certainly related to his desire to know more about the crowned sifaka *Propithecus coronatus*, a species known at the time only from specimens independently collected in northwestern Madagascar by Crossley and Van Dam. As one of only three species of its genus that Grandidier recognized, the crowned sifaka was a major subject of the imminent volume of the *Histoire* devoted to the indriid lemurs (Volume VI: Grandidier and Milne-Edwards 1875).

Figure 1. Map of Madagascar, showing main towns and localities associated with Alfred Crossley. Drawn by Patricia Wynne, from Tattersall (2022).

Grandidier's appeal to Sharpe for information was evidently successful. In a letter dated 15 December 1876, and sent to subscribers to the *Histoire* along with a revised distribution map of the sifakas, Grandidier records having visited Crossley in Halifax (and Van Dam's boss, Hermann Schlegel, in Leiden) to obtain more information about the crowned sifaka. Given what we know of the English collector's travels, the visit to Halifax must have been made in the first half of 1876. Clearly, Grandidier considered that consulting Crossley was worth a long special journey, a circumstance that makes it all the odder that in his 1892 listing of travels in Madagascar he did not see fit to include the English naturalist's 1874–5 and 1876–7 itineraries in his 1892 listing, despite the huge productivity of the former and the disastrous conclusion of the latter (see Tattersall 2022 for the sad details).

The very first mention of Crossley in any literature of which I am aware occurs in an article that Grandidier published in the February 1870 issue of the Paris-based *Revue et Magasin de Zoologie Pure et Appliquée*. Given that Grandidier was in far-away Madagascar at the time of its writing, that article, which bore the rather cumbersome title of "Description de quelques animaux nouveaux, découverts à Madagascar, en novembre 1869" cannot have been composed later than the end of 1869. Two of the five animals that Grandidier then described and named were a primate, *Chirogalus crossleyi* (Crossley's dwarf lemur, *Cheirogaleus crossleyi*), and a bird, *Bernieria crossleyi* (Crossley's babbler, *Mystacornis crossleyi*), that he specifically attributed to the collector for whom he named them, a "traveler who has been journeying through various parts of Madagascar for the *last two years*" (p. 50, emphasis added). This statement strongly suggests that Crossley, far from having first arrived as a collector in Madagascar in 1869 as I had supposed (Tattersall 2022), had in fact been conducting visits to Madagascar since late 1867. And indeed, the naturalist's initial return to Madagascar might well have been even earlier than that: in Volume VI of the *Histoire* Grandidier (1875, p. 2) notes that certain species were rare in collections back "in 1865 when [I] on the one hand, and Messieurs Lantz [Jean Auguste Lantz, Curator of the St Denis Museum of Natural History in Réunion], Pollen, Van Dam [and] Crossley, on the other, were undertaking journeys in the island of Madagascar." If Crossley was already collecting in Madagascar in 1865, it would have been a scant half-decade after his escape from slavery there. The balance of the mostly inferential evidence would seem to point in the direction of an early return; but while there are no evident grounds for doubting Grandidier's veracity or powers of recall, it is curious that there are currently no collections known to me that bear witness to any collecting activities by Crossley in Madagascar before 1869.

In stark contrast to earlier years, the zoological literature and natural history museum catalogues of the early 1870s abound with references to Crossley and the specimens he collected. The month after Grandidier's publication in the *Revue*, the Halifax entomologist Christopher Ward (1870a) described four new species of Madagascar butterflies. All were based on specimens that appear already to have been in the hands of the London agent William Cutter in December 1869 (see Tattersall 2022), and in July of 1870 Ward published seven more species (Ward 1870b). On both occasions Ward noted that the specimens had been "recently received" from Crossley, to whom he referred as "my collector in Madagascar," the only provenance he gave for any of them. Sharpe (1870, p. 384) elaborated on the situation a little more: "Ornithologists are greatly indebted to Mr C. Ward of Halifax, who, at

his own expense, equipped Mr Crossley for this expedition [to Madagascar]." Ward is currently Crossley's only known sponsor, either individual or institutional, and virtually all of the latter's non-Ward specimens that I know of made their way into museums and the commercial market via commercial dealers, notably William Cutter and Edward Gerrard in London, Adolph Frank in Amsterdam, and Gustav Schneider in Basel. Indeed, according to Bowdler Sharpe (1871a, p. 602) it was Cutter "who trained [Crossley] in preparing specimens of natural history," possibly at Ward's behest. Ward continued to publish new Madagascar butterfly species until December 1873 (Ward 1873), at which time he abruptly ceased this activity and also likely terminated his support of Crossley.

During the four years between early 1870 and late 1873 Ward also published numerous new butterfly species from Africa, particularly from Cameroon, where Sharpe records he sent Crossley once the latter had concluded his 1870 collecting activities in Madagascar. According to Sharpe (1871a) the collector was also amassing bird specimens in Cameroon between November 30 of 1870 and February 25 of 1871 at a minimum, despite severe logistical difficulties posed by the locals' unwillingness to exert themselves for the sake of natural history, "their profound laziness rendering it necessary to carry all his own collections himself from the mountains to the coast" (Sharpe 1871a: 603). Sharpe (1871a) rewarded Crossley's efforts with the eponym *Turdus crossleyi* (*Geokichla crossleyi*: Crossley's ground thrush), and Ward (1871) followed suit with "much pleasure," by naming the new butterfly species *Godartia crossleyi* (*Euxanthe crossleyi*, Crossley's forest queen) for him.

As early as June of 1870, Sharpe published the first of his series of papers (Sharpe 1870, 1871b, 1872, 1875, 1879) on the ornithology of Madagascar. Those careful studies were entirely based on bird specimens sent by Crossley to Cutter, many of which were then purchased for the British Museum's collections. Sharpe's contributions give us our best glimpses of the rich documentation that Crossley must have furnished with his specimens (and apparently also provided to Sharpe in person). Those glimpses include details of such ephemera as stomach contents, eye color, and behavioral habits, and even of some of the techniques of collection (in one case, by locals using blowpipes). After Sharpe's first Madagascar paper there followed a stream of publications on Crossley-collected accessions to a variety of museums, by authors both from the UK and continental Europe; but announcements of new specimens began fading out after 1875, well before the collector's death in 1877 (see Tattersall 2022 for the little that is known of that late period).

By the time of Grandidier's 1876 visit to Halifax, Crossley and Grandidier had at least been aware of each other's activities for several years, possibly for an entire decade. Which makes it all the more bizarre that, when alluding in the 1892 revision of Volume VI of the *Histoire* (p. I, footnote) to other naturalists who had recently visited Madagascar, Grandidier listed Wilhelm Peters, S. Roch, Edward Newton, Karl Klaus von der Decken, Auguste Vinson, Jean Auguste Lantz, Francois Pollen, and Casparus Van Dam, but did not mention Alfred Crossley – even though the English collector's name appears several times in the pages that follow. It might be relevant that, apart from Van Dam, the explorers Grandidier listed were all from the upper echelons of society, whereas the impoverished Crossley was solidly working-class. And while Van Dam's origins might not have been vastly higher up the social scale than the lone operator Crossley's were, his social acceptability may have been enhanced by his close association with the wealthy Pollen. It is also possible that, as a result of his early experience, Crossley possessed a tendency to "go native" in the field, much as his fellow collector Jules Prosper Goudot had done earlier and to the great disapproval of his straitlaced contemporaries (Andriamialisoa and Langrand 2022). For numerous reasons, then, the exact nature of the relationship between the affluent Grandidier and the humble Crossley remains obscure. But we do know a relationship existed, raising further questions regarding Crossley's relative invisibility.

ANTSIHANAKA

As noted, in February 1870 Grandidier published descriptions of five new animals (one primate, two bats, one tenrec and one bird) that had been "discovered in Madagascar in November 1869" (Grandidier 1870). In that publication Grandidier stated specifically that the primate (*Cheirogaleus crossleyi*, from the "forêts est d'Antsianak") and the bird (*Bernieria crossleyi*, without provenance), had both been collected by Crossley; the others he had presumably obtained himself. By "est d'Antsianak," Grandidier was referring to the mountainous and densely forested escarpment to the east and south of Lake Alaotra, and we know independently from Bowdler Sharpe (1870), whose information came directly from Crossley, that in this same period the Englishman was actively collecting at two sites in that same eastern Antsihanaka region: Nosy Vola ("pronounced "Voula") and Saralalan. Both of these sites lay "southeast of Lake Alout" (Sharpe 1870, p. 385) and were almost certainly somewhere in the vicinity of today's Zahamena National Park (Andriamialisoa and Langrand 2022). Saralalan apparently lay "about seven or eight miles to the eastward of Nossi Vola" (Sharpe 1870, p. 385). Goodman et al. (2006) very plausibly identify Crossley's Nosy Vola with the modern village of Nosivola that lies some 5 km north of the small town of Manakambahiny-Est, and in close proximity to the western boundary of the Zahamena reserve (Figure 2). It is unknown exactly how much time Crossley spent in the Antsihanaka region in 1869; but Sharpe quotes collecting dates indicating that he was at Nosy Vola between October 19 and 28, and at Saralalan not only at various times between November 10 and 20 of 1869, but also on January 28 and February 1 of 1870 (Sharpe 1870, 1871b). He also records that Crossley was at Nosy Vola on November 10, 12 and 13 (possibly servicing traps at both sites simultaneously), thereby not only confirming that the two localities were within an easy walk of each other, but also closely constraining Crossley's whereabouts from mid-October of 1869 to early February of 1870.

Based on what I then knew of the French geographer's travels, I suggested previously (Tattersall 2022) that Grandidier must have obtained his November 1869 specimens directly from their collector, and in the field somewhere close to Zahamena, maybe in the town of Ambatondrazaka at the southeastern end of the Alaotra basin. This would be consistent with the species collected; and if the timing were right, the necessary direct encounter between the two naturalists would not have been difficult to contrive, no matter how remote its exact location: the local people for miles around would have known exactly where the two *vazaha* (foreigners) were. And the timing was almost right, because Grandidier's own handwritten notebooks record that, between October 12 and November 3 of 1869, the French naturalist undertook a journey from Antananarivo to Lake Alaotra and back ("Voyage de

Tananarive au lac d'Antsianak," MNHN General Library Ms 3261, Vols X and XI). The purposes of this journey appear to have been purely geographic; the French explorer's very detailed (almost minute-by-minute) private notebooks do not mention any collecting activities.

However, as tempting as it might be to conclude that the two naturalists must have met at this time, the notion is not borne out by Grandidier's minutely detailed contemporaneous account. Recording his stopping points and geographic observations to the minute (though rarely noting his direction of travel), Grandidier makes it clear that he proceeded east from Antananarivo to some point in the vicinity of today's Moramanga, and then turned north up the Ankay plain to the Lake Alaotra basin. On Day 9 of his journey (October 20) he arrived in the vicinity of the Hova (central government) fort at Ambatondrazaka, lying at the southeastern margin of the extensive wetlands and mudflats that surround the southern and western parts of the lake (Figure 2). The next day he continued up the eastern side of the marshes to some point near Andreba where, then as now, open water commenced. Andreba would have been an ideal jumping-off point for a visit to Crossley's sites to the east of the lake (the only modern road to the region

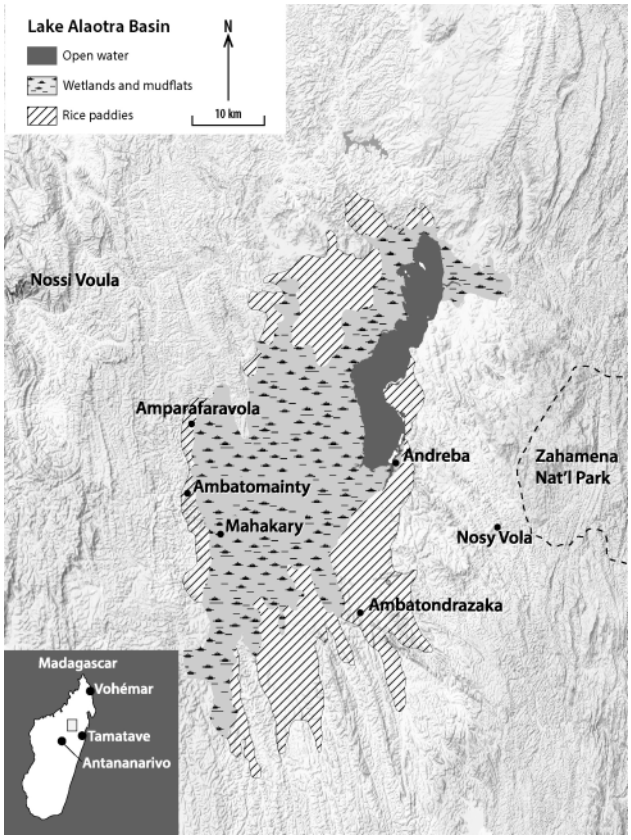

Figure 2. Map of the Lake Alaotra Basin ("Pays d'Antsianak"), showing the presumed location of Alfred Crossley's Nosy Vola collecting site (his other site of Saralalan lay a short distance to the east, possibly within the boundaries of today's Zahamena National Park). Also shown are the places visited by Alfred Grandidier during his Antsihanaka voyage that are identifiable today. Arriving from the south, the explorer proceeded from Ambatondrazaka up the eastern side of the lake basin to Andreba where he investigated a nearby island by canoe. He then rounded the southern tip of the lake and crossed an area of mudflats to reach the western edge of the basin. At that point he turned north, following the base of the hills to the peak of Nossi Voula. Thence he traveled south again to Amparafaravoula and on to Mahakary by canoe, thence to Ambatondrazaka and on to Antananarivo. The basin in which Lake Alaotra lies is surrounded by hills, and open water is restricted today to its northeastern part. To the west and south lies a vast area of marsh and mudflats crossed by navigable waterways. In many peripheral areas wetlands have been replaced by rice paddies, the approximate extent of which is depicted as on the IGN 1:500,000 map of 1964; during the mid-nineteenth century cultivated areas would have been significantly smaller. Map by Jennifer Steffey.

begins there, and as the crow flies Nosivola is less than 20 km. distant along it); but instead, after exploring an island near the lake's eastern shore, Grandidier traveled from Andreba around the southern tip of the lake and headed west, walking across seasonally dry mudflats to reach a place he called Amboitse-Tsara. He spent the night somewhere in its vicinity, possibly close to today's Ambatomainty.

The next day Grandidier and his retinue walked broadly west, through countryside depopulated by Sakalava tribal raids, toward the rugged terrain that marks the western edge of the Alaotra basin. On October 24 he turned north, following the base of the western hills. At 9:19 am he spotted two peaks ahead, both surmounted by forest. A village nestled at the foot of the higher and more distant one. Amidst numerous erasures in his notebook, Grandidier noted that the larger hill and the village bore the same name: "Nossi Voula." At 9:31 he began his ascent of this peak, reaching its summit at 9:55. By 10:35 he was back on the plain, where he and his porters took a break until 2 pm. After restarting in a southerly direction, by 4:30 pm he and his companions were already in sight of "Amparafaravoula" (Amparafaravola), the lake basin's second largest settlement, lying on its western edge more or less directly across from Andreba. We can identify this place with confidence, not only because it retains the same name today but because Grandidier featured it ("fort Hova dans l' O. du lac") in the list of important Antsihanaka localities he compiled for the *Géographie* volume of the *Histoire* (Vol. 1, p. 140). Grandidier's Nossi Voula must thus have been located within a 3-hour brisk walk (Grandidier typically walked briskly, favoring 120 paces/minute wherever possible) of Amparafaravola village. The next day the naturalist continued south by pirogue, reaching the islet of Mahakary after four hours. From there he could still see the summit of Nosy Voula behind him, at a compass bearing of 328°. That is very close to the bearing to Amparafaravola itself from the islet, making it virtually certain that Nossi Voula was the higher of the twin peaks that appear on the Institut Géographique National (IGN) 1:500,000 map (Tamatave sheet 6) some 20 km. to the northwest of the town, just beyond Ambohimanga village (Figure 2). From Mahakary, Grandidier proceeded by canoe to the Hova fort at Ambatondrazaka, paying a courtesy visit to the commandant and staying two nights.

Interestingly, it was after Grandidier had returned to the fort, following a day-long foray on October 27, that he made the only reference to Crossley that one finds in his entire journal of the Antsihanaka journey. In a brief remark on the north-south extent of the rainforests that lay not far to the east of Ambatondrazaka, he noted that the land to the south of 'Vouhima" was mountainous and forested, but that the area to its north was "nu et sterile" (thereby confirming, significantly, that references to "Vohima/Vouhima" made at the time were not necessarily to the eponymous port town, but to the entire former province that had been administered from it). Since Grandidier had never visited northern Madagascar, he must have received this environmental information from an informant. That informant was most likely Crossley, because Grandidier went on to write that "on me parle d'un dépôt de coquilles fossiles abondants peu au nord et aussi de mines de charbon (renseignements Quinet à Crossley)."

So, when and where had Grandidier obtained the information that he attributed to Crossley? And why should Grandidier have found himself musing about the north of Madagascar, which he had never seen, in the middle of updating what was otherwise a

pretty straightforward account of his current journey? His note certainly reads as if Quinet had informed Crossley (whose journey earlier in the year had begun in Vohémar) about the fossil shells, and that the latter had then relayed the information to Grandidier. But how? If the exchange did not occur in Antsihanaka, it could only have happened in person if Crossley had indeed been to Vohémar before 1869, and the two naturalists had subsequently met prior to that year. Conceivably, Grandidier had received Crossley's report from an intermediary; but if so, it is very odd that Grandidier should not have mentioned the fact while naming everyone else. Is it just possible to imagine that Crossley and Grandidier actually met at the Ambatondrazaka fort on October 27 and traded information (and possibly the specimens that Grandidier published early the next year)? And that Grandidier had simply neglected to mention the fact in his journal? Like much else in this story, that speculation stretches credulity; and in the very unlikely case that it is accurate, why such an egregious lapse in a hugely detailed personal record? We currently have no way of resolving any of these uncertainties, although on balance the little we know does seem to support the idea that Crossley had worked in Madagascar before 1869. All we can be sure about is that, having made this cryptic reference to his fellow Antsihanaka voyager, Grandidier did not linger in Antsihanaka. After two nights at Ambatondrazaka he headed south and west again, retracing his steps to Antananarivo and arriving there on November 3, Day 23 of his journey.

It may boggle the imagination that both Grandidier and Crossley, shortly to be linked forever by zoological nomenclature, should have independently and unwittingly found themselves at two different sites, both with the unusual name of Nosy Vola ("treasure island," even though neither was an island), and both in the Alaotra Basin, on the very same date: October 24, 1869. And despite the strained relations then existing between the English and the French in Madagascar, and the uncertainties just raised, there is no obvious professional reason why Grandidier should have deliberately omitted any mention of contact with Crossley from his private notebooks (which also make it pretty clear that he had not had the time to divert to from Andreba to Nosy Vola). As for the "Nossi Voula" reference, it is very clear from Grandidier's journal entries that by October 24 he was already on the western side of the lake, while both Bowdler Sharpe's account, and Grandidier's insistence on the "est d'Antsihanaka" origin of his *Cheirogalus crossleyi*, make it virtually certain that on this date Crossley was at his Nosy Vola, or just possibly Saralalan, and that both of those sites were on the eastern side of the Alaotra basin and in the vicinity of today's Zahamena National Park (Goodman et al. 2006, Andriamialisoa and Langrand 2022). That latter geographical location is also consistent with the mammal and bird species Crossley was collecting at the time at Nosy Vola and Saralalan – although Grandidier did note, in his journal entry for October 31, 1869, that very similar forest to that of the east also existed "à l'O[uest] et à peu de distance d'Amparafaravoula," so perhaps the case cannot be considered entirely closed on grounds of general habitat. And of course, if Crossley and Grandidier did not meet on October 24, 1869, then we can more readily accept Grandidier's (1870) declaration that the holotype of Crossley's Dwarf Lemur was indeed collected in November of that year, as clearly stated in the title of the paper describing it. Sadly, the specimen itself cannot help because there is no evidence that it ever reached the MNHN in Paris – supporting the report that all the materials described by Grandidier in early 1870 were destroyed together in that warehouse fire in Réunion.

Still, if the English and French naturalists did not meet somewhere in Antsihanaka, how did Grandidier obtain his Crossley specimens within the very short window of time available for him to write his manuscript and ship it to France for publication? Most likely, perhaps, an intermediary in Antananarivo was involved – and Crossley was, after all, in the habit of disposing of his materials through third parties. Grandidier could then have purchased his Crossley types from the naturalist's representative after his return to the capital from Antsihanaka in early November (hence "discovering" them that month). Or maybe they were acquired toward the end of November, or even in early December, because even if the specimens had been collected in Antsihanaka right at the beginning of November, it is unlikely they could have been in Antananarivo much before November 8, when the restless Grandidier departed on an excursion to the Andringitra Massif. Finally, it is just possible that at some time in November of 1869 Crossley himself came briefly to Antananarivo to obtain supplies or to ship out specimens, and encountered Grandidier who bid on the two specimens before they could be sent to Cutter. Still, the probability that Crossley was very busily collecting at Nosy Vola and Saralalan from mid-October of 1869 through early February of 1870 argues quite strongly against a time-consuming visit to Antananarivo, as possibly also does the absence of any mention of Crossley in the records of the fairly numerous English missionaries in Antananarivo at the time (although, apart from the appearance of his name in a list of collectors in Madagascar quoted in the *Antananarivo Annual* from the February 3, 1876 issue of *Nature*, there are admittedly no later mentions either, even though it is virtually certain that Crossley subsequently visited Antananarivo more than once). All in all, if we can take the title of Grandidier's paper literally, an intermediary must have been involved in the transfer of the specimens.

AN ENDURING ENIGMA

So, did Crossley and Grandidier ever actually meet before the latter's visit to Halifax in 1876? We know they must have been involved in some kind of transaction over the two holotypes in 1869, but it is not clear that it required personal contact. In November of 1869 Grandidier was within several months of ending his last visit to Madagascar, implying that, unless Crossley really did start working in Madagascar in 1865 or 1867 (as Grandidier claimed/suggested in 1892 and 1870, respectively, and seems plausibly to have been the case even in the absence of direct evidence), the opportunities for a personal encounter in Madagascar would have been few or nonexistent. Up until the time of Grandidier's trip to Antsihanaka, Crossley had been fully occupied by his collecting activities in the north and east of the island, and as far as we know he had yet to visit Antananarivo on this occasion (Tattersall 2022). For his part, Grandidier is known to have left the island for the last time in August 1870, departing from Tamatave. Previously (Tattersall 2022) I quoted a departure date for Grandidier of July 26, 1870, citing a contemporary newspaper report; but one of Grandidier's handwritten notebooks contains a copy of a letter to the British Consul datelined "le 10 Août 1870. Tamatave," so his long-anticipated leaving had evidently been delayed by the outbreak of the Franco-Prussian War in mid-July, consistent with Faure et al's (2019) report of a "fin août" departure. According to a press report (see Tattersall 2022), Crossley was "missing" between

May and mid-July of 1870; but he had reappeared by July 16, so that if he had promptly returned to his probable home base of Tamatave he would have overlapped there with Grandidier by up to six weeks. Despite Crossley's tendency to invisibility, the fact that Grandidier had just named two vertebrate species after him would surely make it rather improbable that, both as members of a tiny expatriate community, and as possible acquaintances of long standing, the two naturalists would not have interacted in some way.

In answering questions of this kind it would help to know a little more about the personal and social relationships that existed between the English and French naturalists. Their nations were rivals for political favor in Madagascar in the decades following the death of Queen Ranavalona I in 1861, and the resulting spirit of mutual suspicion might naturally enough have served as a barrier. Nonetheless, given that Grandidier named two species for Crossley, and later visited him in Halifax to obtain information, the likelihood must be that some form of relationship, or at least some degree of mutual respect, existed between them. Still, evidence for the nature of the two men's association remains exceedingly thin. Crossley contrived to leave behind mystifyingly few documentary traces, so for his part this seems inevitable. But in addition to his voluminous publications, Grandidier (and his son Guillaume) left a substantial Madagascar archive that is now in the Library of the MNHN in Paris, raising the hope that the French geographer might at least informally have recorded more about the English naturalist. Sadly, though, the elder Grandidier's notebooks disappoint in this respect, and his archive preserves very little correspondence from the time of his Madagascar explorations. Indeed, aside from the single journal entry quoted above, I have been able to locate within the Grandidier archives only two other documents, both handwritten, that mention Crossley's name.

One of those items, dated 1874, is a torn scrap of paper that merely bears Crossley's surname and the title of a paper in which the English entomologist William Chapman Hewitson (1874) described a new genus of Madagascar butterfly from a Crossley specimen. This bare reference to Hewitson and Crossley must almost certainly relate in some way to the second document, which is an undated list of names and addresses of naturalists with whom Grandidier presumably corresponded. In order of listing, those naturalists are: Otto Staudinger, the German natural history dealer and entomologist; Christopher Ward, Crossley's Halifax sponsor; Crossley himself; Henley Grose-Smith, an English lepidopterist who owned the butterfly that was collected by Crossley and described by Hewitson; Robert McLachlan, a British butterfly expert and first editor of the *Entomologist's Monthly Magazine* in which Ward and Hewitson both published Crossley specimens; Hewitson himself; Johannes Keulemans, a well-known Dutch artist based in London and illustrator of several volumes of Grandidier's *Histoire de Madagascar*; and Richard Bowdler Sharpe, the BMNH ornithologist. Madagascar (or Crossley specimens from the island, or even Crossley himself) might supply a fairly weak connection among all or most of these individuals; but the exact reasons for which Grandidier compiled the list remain tantalizingly obscure.

In retrospect, we can see both Alfred Crossley and Alfred Grandidier as giants of early natural history collecting in Madagascar. Their travels around the island may have overlapped by as much as half a decade; and they clearly did not consider themselves outright rivals, since one of them evidently supplied the other with important specimens and precious information. So why was there so little apparent (or at least recorded) interaction between them, even when Grandidier's travels brought him so close to Crossley in the remote Alaotra Basin, where they were likely the only *vazaha* for many miles around? And, perhaps more significantly, why did Grandidier, an industrious note-taker, do so little to record any interactions between them that there might have been? Grandidier was reportedly fluent in English, while Crossley is said to have been both kind and self-effacing (Anon. 1877), and on an individual level he seems hardly to have been the kind of person that anyone interested in the natural history of Madagascar would have wished to avoid (with the likely exception of the rival collector Josef-Peter Audebert: see Tattersall 2022). Indeed, while entirely lacking any scientific pretensions Crossley was clearly a keen and retentive observer, and he almost certainly possessed extensive knowledge of great interest to Grandidier even before he had collected *Propithecus coronatus* in the northwest. Nonetheless, self-effacement seems to have triumphed.

One can only suppose that the reasons for Crossley's almost complete invisibility to other Madagascar travelers lay deeply embedded in the same class barriers as those that also seem to have prevented him from interacting in the nearby British colony of Mauritius with his fellow countryman and Madagascar explorer Sir Edward Newton. The latter had observed and collected birds in Madagascar on two occasions during the early 1860s (Roch and Newton 1862, 1863; Newton 1863a,b), and he was resident in Mauritius as Colonial Secretary from 1859 to 1877, during which time Crossley visited the colony at least twice (Tattersall 2022). Birds, natural history in general, and an acquaintanceship with Madagascar would have given Crossley and Newton an enormous amount in common intellectually; and a letter dated August 3 1873 from Crossley to the administrator's brother, the Cambridge ornithologist Alfred Newton, while simply an acknowledgment of payment (presumably for bird specimens), does bear witness to a connection of some kind, however indirect. Once again, the lack of any evidence that the two English Madagascar explorers ever met, even if only formally by crossing paths at a meeting of the Mauritius Institute, appears to be yet another indictment of the stultifying class system within which they (and also, it seems, Grandidier) were imprisoned.

Finally, it should be noted that the mid-nineteenth century was the period during which scientific knowledge of the biogeography of Madagascar was beginning to become organized. Both Crossley and Grandidier were instrumental in this nascent process, the latter, for instance, producing (with some help from Crossley) the first comprehensive distribution maps of endemic vertebrate species in Madagascar of the kind that still guide conservation efforts today. As Crossley's movements around the island gradually come into focus they tend to suggest, in combination with other evidence, that from a biogeographic point of view Madagascar a century and a half ago was in many respects remarkably similar to the way it is now. This suggests a substantial resiliency in Madagascar's ecosystems: a resiliency that must surely encourage those devoted to their conservation in the face of twenty-first century threats.

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