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Citation

Smith, P. J. (2023). Marcgraf's fish in the *Historia Naturalis Brasiliae* and the rhetorics of autoptic testimony. In M. Françaço (Ed.), *Toward an intercultural natural history of Brazil. The Historia Naturalis Brasiliae reconsidered* (pp. 122-141). New York: Routledge.
doi:10.4324/9781003362920-7

Version: Publisher's Version

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Note: To cite this publication please use the final published version (if applicable).

6 Marcgraf's Fish in the *Historia Naturalis Brasiliae* and the Rhetorics of Autoptic Testimony¹

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Of all those who described the natural history of distant lands in the sixteenth and seventeenth centuries, [Marcgraf] was assuredly the most intelligent and the most exact, and the one who most contributed to the natural history of fishes.²

— Georges Cuvier, *Historical Portrait of the Progress of Ichthyology* (1995 [1828]), 47

Introduction

This chapter is about the zoological “books” (chapters) by Georg Marcgraf in Piso and Marcgraf's *Historia Naturalis Brasiliae* (henceforth HNB) and more specifically his chapter on fish, with some occasional extrapolations to his chapters on other animal groups. Marcgraf's ichthyological texts and illustrations will be addressed as well as their sources, their role in the transmission of knowledge, their editing performed by Johannes de Laet (1581–1649), and their transnational reception by some famous ichthyologists: the seventeenth-century English naturalists Francis Willughby (1635–1672) and John Ray (1627–1705), the German ichthyologist Marcus Elieser Bloch (1723–1799), and finally the French zoologist Georges Cuvier (1769–1832). Their reactions make us aware of what is new in Marcgraf's ichthyological chapter.

This chapter will restrain from any further extrapolation to the botanical portion of the treatise, because this portion is quite different from the zoological one. The botanical portion counts 140 pages, whereas the zoological portion covers no more than 120 pages. Marcgraf's botanical descriptions are longer and much more detailed than the zoological ones. As for the illustrations, in his *Preface to the Reader* the editor De Laet informs us that the botanical illustrations were not made by Marcgraf but commissioned by De Laet on the basis of the specimens collected and dried by Marcgraf.³ The botanical woodcuts are larger than Marcgraf's ones (no more than two per page, whereas the zoological pages often have three or four illustrations). Moreover, the botanical illustrations are technically more perfect and also more detailed.

The Two Paratexts: Practical Versus Scholarly

Our starting point will be the two paratexts of the HNB, namely Marcgraf's *Dedication* to the Brazilian governor Johan Maurits of Nassau-Siegen (1604–1679) and De Laet's *Preface to the Reader*. These paratexts give us essential information about the fabrication of Marcgraf's text. In his *Dedication*, Marcgraf presents himself as a meticulous observer, who made his own descriptions and illustrations and himself collected the names the Indigenous Brazilians gave to the animals described. This is important information, because, by doing so, Marcgraf positions himself as a “practical man” (as understood by Anthony Grafton),⁴ a man of direct observation, whose perspective is not biased by any scholarly knowledge. This directness, this “autoptic imagination,” has been recently addressed by Neil Safier in his article *Beyond Brazilian Nature*.⁵ It can be linked to one of the best known early modern texts on Brazil: namely Michel de Montaigne's (1533–1592) chapter *Des Cannibales* in his *Essais*. In this chapter, Montaigne dwells upon the usefulness of the eyewitnesses of practical men, fulminating against “those clever” cosmographers, who always have the tendency to embellish their reports. Montaigne eloquently exemplifies his argumentation by focusing on one particular person from his household who stayed for a long time in French Brazil: “I have long had a man with me who stayed some ten or twelve years in that other world which was discovered in our century when Villegaignon made his landfall and named it *La France Antartique* [...] That man of mine was a simple, rough fellow – qualities which make for a good witness: those clever chaps notice more things more carefully but are always adding glosses; they cannot help by changing their story a little in order to make their views triumph and be more persuasive; they never show you anything purely as it is: they bend it and disguise it to fit in with their own views [...] So you need either a very trustworthy man or else a man so simple that he has nothing in him on which to build such false discoveries or make them plausible; and he must be wedded to no cause. Such was my man; moreover on various occasions he showed me several seamen and merchants whom he knew on that voyage. So I am content what he told me, without inquiring what the cosmographers have to say about it. What we need is topographers who would make detailed accounts of the places which they had actually been to. But because they have the advantage of visiting Palestine, they want to enjoy the right of telling us tales about all the rest of the world! I wish everyone would write only about what he knows – not in this matter only but in all others.”⁶

This matter-of-fact perspective of the reliable eyewitness is visible everywhere in Marcgraf's part of the treatise: in the vocabulary, syntax, and style of his Latin, the chaotic *dispositio* (composition and structure) of the different parts of his work, and the naive crudity of most of his woodcuts. While reading the tome, one has the impression that this omnipresent

reliability has been carefully cultivated – I will come back to this aspect in much more detail.

In the second paratext, the *Preface*, De Laet sketches the original state of Marcgraf's manuscripts that Johan Maurits commissioned him to publish: according to De Laet, these manuscripts were "indigested and imperfect commentaries,"⁷ which for reasons not specified were written in a secret code that he had to decipher. Editing Marcgraf's text was therefore a "laborious and painstaking" enterprise.

De Laet presents himself as Marcgraf's scholarly counterbalance. This is visible in the great number of annotations by De Laet himself – annotations that give the tome the learned outlook that is expected of any serious publication in Latin.

General Structures

It is now time to turn to Marcgraf's text itself. The general structure of the zoological portion of the treatise is atypical compared to the authoritative zoological encyclopedias by Conrad Gessner (1516–1565) and Ulisse Aldrovandi (1522–1605). The order in four chapters – respectively (a) fish, (b) birds, (c) mammals and reptiles, and (d) insects – is indeed strange. This is not the order of animals in the traditional Great Chain of Being, with the insects, after the plants and the non-living material world, at the bottom of the Creation, and mankind at the top. For the first three animal groups, Marcgraf's order follows the biblical order of Genesis I: after the plants follow the creatures of the waters, the creatures of the air, and the terrestrial animals. But what about the insects as a final category? The only order which comes close to Marcgraf's is the one of the four elements (water, air, earth, and fire) as it is thematized in the contemporary zoological work by Jan Jonston (1603–1675) as reedited by Frederik Ruysch (1638–1731) in 1718.⁸ Jonston's work follows the order of the elements, respectively: fish, birds, mammals, and a final category of insects and mollusks. This final category is also visible in the four emblematic albums on animals, grouped according to the four elements, by Joris Hoefnagel (1542–1601) at the end of the sixteenth century.⁹ The element of fire in Hoefnagel includes, very curiously, both the insects and mankind, thus closing the Chain of Being into one album by combining in the element of fire both the lowest and the highest living creatures. And from this perspective, it is not astonishing that Marcgraf, after his part on Brazilian insects, continues with the Indigenous Brazilians.

The internal order of these four chapters is also very atypical. There is no tendency to follow the classifications given by the ichthyological and ornithological works by Pierre Belon (1517–1564), Guillaume Rondelet (1507–1566), Gessner (not his alphabetically ordered *Historia Animalium* but his other naturalist works), or Aldrovandi. These orderings were *grosso*

modo tripartite: freshwater fish, saltwater fish, other *aquatilia*. By contrast, Marcgraf's ordering of birds and fish seems to be simply arbitrary. This arbitrary character could have easily been corrected by De Laet, as it was done by Piso and several other readers of Marcgraf, such as Willughby and Ray, and Ruysch. But De Laet seems to favor the arbitrary and the incongruous, probably in order to give the reader the impression of direct observation: all Marcgraf's information is given "*prout venerant ad manus*," as it falls into his hands, in the words of De Laet in his *Preface*. The same arbitrary order, regulated (or seemingly regulated) by sole coincidence, can be found in the naturalist chapters of the two most influential books on Brazil before Marcgraf, namely André Thevet's (1516–1590) *Singularités de la France Antarctique*, and Jean de Léry's (1536–1613) *Histoire d'un Voyage Faict en la Terre du Bresil, autrement Dite Amerique*.¹⁰ It reaffirms the autoptic character of the publication, highlighted in its paratexts.

Descriptive Rhetorics

Strangely enough, Marcgraf's descriptions of the individual animal species do not have an arbitrary structure. They implicitly follow a descriptive standard, which is an echo of the well-structured descriptions of Gessner and Aldrovandi. Marcgraf's descriptions are mostly built up in three main parts: etymology, an often meticulous morphological description, and a brief part on the animal's utility for man. Let us take a typical example: the description of the "Petimbuaba," the Bluespotted Cornetfish (*Fistularia tabacaria*) (Figure 6.1).¹¹

This is how the description begins: "PETIMBUABA for the Brazilians; in Dutch Tabac-pijpe, named after its form. The fish is three to four feet long, and the body resembles that of an eel. It has a sharp-toothed mouth, whose upper jaw is shorter than the lower one." Then all measurements of the fish are given in very much detail: "the length of the beak measures six inches, and the maximum mouth opening measures up to only one inch. The head is nine inches long from the eyes down to the very tip of the beak, the width of the head behind the eyes is five inches, shrinking slowly to about three inches." The description pauses for a moment at the fish's eyes: "it has pretty big eyes, as big as a walnut, in the form of a bird feather, with a beautiful red-colored pupil, surrounded with a silver-colored dress, with small spots on the front and the back."

Then follows a very detailed description of the position, shape, size, and color of the different fins (i.e., pectoral, dorsal, ventral, and anal fins), with, of course, special attention for the fish's characteristic tail, of which the middle caudal rays are extended as a long filament: "like that of a moray, thin, round and six inches long." Then the skin is described: "the skin is as slippery as an eel's skin, liver-colored, whitish on the ventral side, and reddish at some places." Also the characteristic rows with blue, sometimes

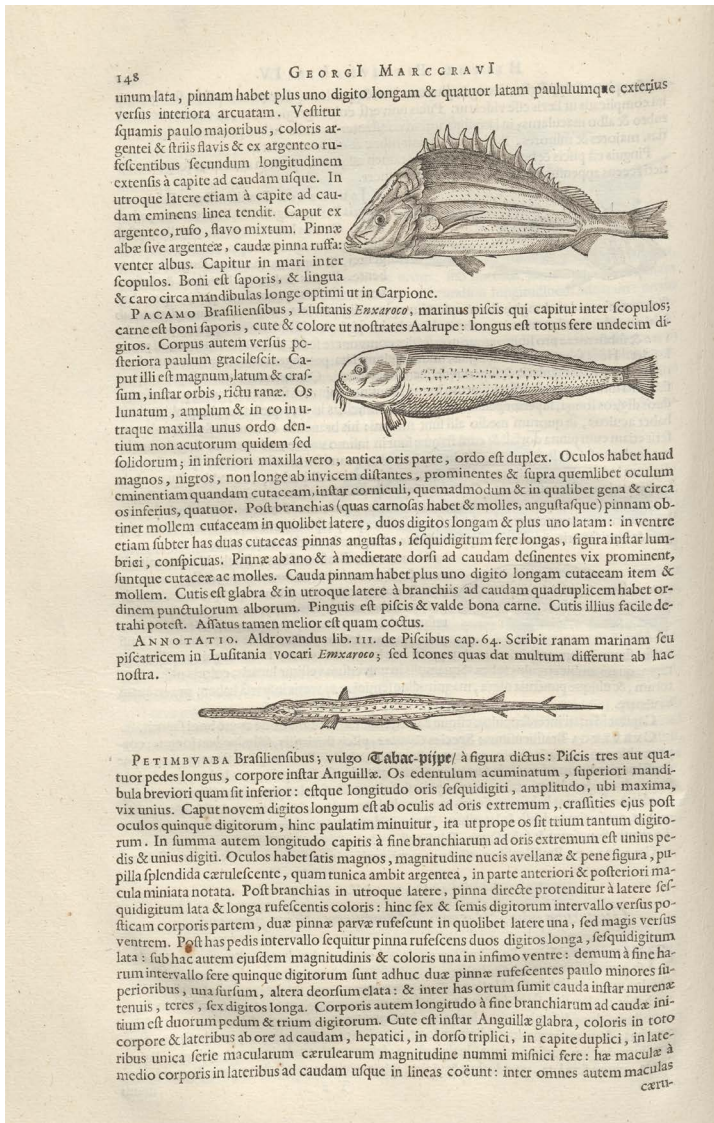


Figure 6.1 Bluespotted Cornetfish in *Historia Naturalis Brasiliae* (Piso and Marcgraf, 1648: part II, 148). Leiden University Libraries (copy THYSIA 2274).

greenish, spots over the body are mentioned. This long morphological description concludes with a short, laconic sentence: “edulis est piscis” [the fish is edible] followed by a brief reference to Conrad Gessner’s work on fish: “acus piscis vocari potest de quo vide Gesnerum.” [This fish can also be called *acus piscis* [thin fish]; on this, see Gessner.]

Marcgraf's description is followed by De Laet's scholarly *annotatio*: "ANNOTATIO. Aldrovandi, in his first book on fish, gives some illustrations of the *acus piscis*, but none of them corresponds to the species meticulously described by the author [Marcgraf], and whose colored drawing [of the fish] we have also seen – maybe except for Belon's *acus minor*,¹² but our species has no caudal fins such as Belon's one has."

Let us analyze this description in more detail because it is, in its rhetorical disposition, information provision, and implied ideology, typical of Marcgraf's other ichthyological descriptions. Like most of his zoological descriptions, it begins by giving the Indigenous Brazilian name. For the few descriptions where the Brazilian name is not given, this is explicitly stated (almost excused) by De Laet ("nomen Brasiliense ab Auctore non proditur").¹³ In doing so, Marcgraf follows the examples of practical men, like the voyagers Thevet and Léry in their descriptions of Brazil, or Jacques Cartier (1491–1557), the French explorer of Canada, all of whom give the Indigenous names for the unknown plants and animals they encounter. This tendency can also be found in the works of the learned sixteenth-century zoologists like Rondelet, Gessner, and Belon, who, for the animals unknown to them, not only tried to forge a Latin name (or a French one, in the case of Belon) but were also interested, as true humanist scholars, in all aspects of zoological lexicology, ancient and modern, European and exotic. In the case of Marcgraf, the Indigenous name is often, but not always, followed by a Dutch name and/or a Portuguese name. In the case of the cornetfish, the Dutch name *Tabac-pijpe* appears to be a literal translation of the Tupi name, which Marcgraf probably picked up with the Dutch in Johan Maurits' court. Occasionally, in the case of the birds, a German name is given.

Marcgraf's name-giving can be interpreted diversely. First, name-giving can often be considered as an act of appropriation – and this is certainly the case here: common Dutch names, such as *baars*, *harde*, *sprot* (i.e., respectively: perch, gray mullet, sprat), imposed on exotic fish, contain an intended political message, that is, "these fish are Dutch," just as Brazil was called *Nederlands Brasiliën* (Dutch Brazil). One also thinks of the provocative "Brasilia qua parte paret Belgis" as was indicated on a hand-colored map, printed in 1647, on which several Brazilian animals are to be seen, all of them taken from Marcgraf's illustrations.¹⁴

A second reason for giving Dutch and Portuguese names is because they are often explicative: they inform the reader on the essential physical aspects of the animals described.¹⁵ Here are some examples of Dutch and Portuguese explicative names, to which Marcgraf added his commentary:

- "*Tabac-pijpe*, à figura dictus." [*Stem of a pipe*, so named after the fish's form.]¹⁶
- "*Belgis een Cruyshaye*, à figura." [Named in Dutch *a cross shark* after its form.]¹⁷

- “Piscis ingens, quem vocant *Jacob Evertsen*.” [A red fish, which they [the Dutch] call *Jacob Evertsen*.]¹⁸
- “Lusitanis *soldido* (quia armatus).” [Named in Portuguese *solid*, because it is armatured.]¹⁹
- “*Peixe viola* Lusitanis, ob figuram quam cum cithara communem habet qua ludant Lusitani.” [Named *violin fish* in Portuguese, because its form resembles a cither played by the Portuguese.]²⁰

This reason is also applicable to Marcgraf’s bird names: these are native Dutch names, to which sometimes Dutch neologisms are added, such as “Bloemen-Specht” (Flower-Woodpecker, applied to a hummingbird), “Menscheneter” (Man-eater, applied to the urubu, a carrion bird), and “Seurvogel” (a word of unknown meaning and etymology, applied to a jabiru).²¹ And, contrary to Marcgraf’s fish names (which is quite understandable, because of the fish’ muteness), several of his original bird names are onomatopoeias. One of them is Dutch: “Grietjebie,” recorded by Marcgraf (still used today in Suriname).²² In using (native-language) imitative bird names, Marcgraf places himself in a long tradition: beginning with the travelers Thevet and Léry, but also Belon, and later, in the eighteenth century, Georges-Louis Leclerc de Buffon (1707–1788), who was fond of native onomatopoeic name-giving – contrary, for instance, to the ornithologist Mathurin Jacques Brisson (1723–1806), who advocated a French and Latin descriptive nomenclature, i.e. name-giving that takes into account the bird’s distinctive physical characteristics.²³

There is a third reason for Dutch name-giving: it enables the intended (Dutch) reader to connect the strange and the exotic to what is familiar to them. It is noteworthy that in Marcgraf’s bird chapter, Dutch is sometimes replaced by German,²⁴ his native language, probably for lack of adequate Dutch ornithological terminology. This explicative, “familiarizing” function of Dutch and German nomenclature is related to the only rhetorical figure of the text, namely comparison. Thus, birds are regularly compared to birds mentioned in Dutch: “Lepelaer” (spoonbill), “Meeuwe” (gull), “Kerkuytle” (barn owl), and “Waterhoen” (moorhen).²⁵ In the case of the “Petimbuaba,” the strange fish is compared two times with the eel (“instar Anguillae”), and one time with the murine, both fish species well-known to the European reader.

This brings us to the second and main section of Marcgraf’s texts, the description itself, of which we already noticed its meticulous and exhaustive character. The descriptive section is written in a dry, matter-of-fact style without any stylistic embellishment – a style that fits the practical man. As we have already noticed, the only stylistic figure allowed is the comparison, not meant as embellishment but solely serving to inform the reader about the format and the form of the fish’s physical appearance: the fish is compared to an eel and a murine, and, almost poetically, its eye to a walnut and a bird feather.

Marcgraf's matter-of-fact style can also be seen in his vocabulary, and in the syntactic structure of his sentences as well. Most sentences open by mentioning the part of the body under discussion. In our example of the cornetfish: *os, caput, oculos, post branchias, post has pedes, and cute*. By this anteposition of the nouns, independent of their grammatical cases, the general structure of the description is made visible. In his zoological encyclopedia, Jan Jonston adopted this highlighting by syntactic anteposition and goes even further by italicizing the antepositioned elements.²⁶ In one of the later zoological anthologies that incorporates Marcgraf's text, namely the *Theatrum Animalium* by Frederik Ruysch, this double emphasis – anteposition and italicizing – is systematically used in the Marcgraf parts of Ruysch's book.²⁷

These antepositioned nouns visualize the order of the description, which goes from head to tail, mostly ending with some general remarks on the scales or skin, especially their colors. In most of Marcgraf's ichthyological descriptions rather technical attention is given to the fins: their position (pectoral, ventral, dorsal, anal), number and form, and their constitutive rays. All this is essential for an adequate description of the anomalous fishes Marcgraf describes, such as our strangely formed cornetfish. It shows a good, practical, and up-to-date knowledge of the standards of contemporary ichthyological description, as they have been set out by Rondelet and Gessner. But it stays within the *external* morphology of the fish; no dissection is done, and there is almost no information given on the fish's *internal* morphology.

Most of Marcgraf's ichthyological descriptions (but not his description of the cornetfish) continue with a brief remark about the habitat, roughly divided into fresh water, salt water, coastal water near the rocks, and brackish water. Sometimes a more precise location is mentioned.

Marcgraf's descriptions end with a remark on the edibility of the fish described. Mostly this remark is brief – “*edulis est piscis*” – but regularly Marcgraf takes the opportunity to highlight the autoptic nature of his observations (“*saepe commedi*” [I have often eaten it]), or to give some further (literary) savoring, culinary, medical, and more spectacular details. Some examples:

- “The fish has to be roasted, because cooked he is not as good.”²⁸
- “The fish is not edible. But, according to the fishermen,²⁹ when eating it, one is paralyzed for three hours.”³⁰
- About the piranha: “the fish is edible; its meat is white, a bit dry, and tastes good. I have eaten this quite often.” This information stands out, because in preceding it, Marcgraf brings up the danger of the piranha: “with a single bite the fish can rip off a piece of a man, as if it is cut off with a knife. Once you enter the water, even if only with a foot or hand, then you are immediately injured by this fish. The fish is fond of human blood, and loves human flesh.”³¹

Generally speaking, however, the description is dry and neutral; the first person is not used, except for some rare uses of “commedi” and “vidi” [I saw,] meant to underline the autoptic mode of the description. There are some rare but interesting cases in which the author relates in the first person a personal experience with the fish under discussion, for instance the porcupine-fish: “I had a small specimen alive in February 1639, and two others in September [...] The skin like substance remains constant as it swims in the water by itself. However, as soon as the fish is taken out of the water, it turns yellow. It can blow up, and then deflate itself. It makes a sound: Uch, uch. If you want it to inflate itself, pull one of the spines on its back.”³²

Marcgraf also mentions the strange parasites he found on the Yellowtail Snapper (*Ocyurus chrysurus*). In fact, he finds these parasites so curious, that their description is almost as long as the description of the fish itself: Marcgraf even gives an illustration of these parasites. These amplifications and personal observations are rare in the fish chapter of the HNB; they are more frequent in the other zoological chapters of the treatise. This is quite understandable because birds, mammals, and insects can more easily be kept alive than fish.

Back now to our example of the cornetfish. At the end of the description, there is a brief reference to Gessner (“vide Gesnerum”). Gessner’s huge folio-editions are in fact the only authority Marcgraf regularly refers to, sometimes with precise indications of chapter and pages. This makes it possible to identify the Gessner-edition he consulted, namely the very first edition of 1558.³³ In the fish chapter of his work, Marcgraf’s other references, besides Gessner, are to Carolus Clusius (1526–1609) and to J.-C. Scaliger (1484–1558) – and in the bird chapter, the scarce moments when Marcgraf quotes some other sources especially concern the rather peculiar cases of the hummingbird and the bird of paradise (which does not belong to the Brazilian avifauna). I suspect these references are, at least partially, interpolations by De Laet.

De Laet’s Annotations

This remarkable lack of scholarly references of course fits very well with Marcgraf’s self-image as a practical man. It is in this context that the role of De Laet’s annotations becomes clear. They are numerous for the fish and the mammals – less numerous for the birds. Let us take a closer look at our example of the cornetfish. As can be seen, De Laet expands Marcgraf’s brief reference to Gessner, by adding the authorities of Aldrovandi and Belon, and referring to their illustrations, while explaining the differences between Marcgraf’s cornetfish and the already known European species. These annotations add a learned cachet to Marcgraf’s direct observations, made *sur place*, as the text wants us to believe. De Laet’s references are to the whole canon of natural history: Belon, Rondelet, Aldrovandi, Clusius,

J.-C. Scaliger, with very precise indications of chapter and pages, and of course Gessner. With his references to Gessner there is something strange: all of De Laet's references to Gessner are without indication of pages. This is probably because he possessed a different Gessner edition than Marcgraf; indeed, Gessner's first edition had been sold out since 1585 and therefore it was rare in the seventeenth century – De Laet did not want to confuse the reader by referring to two different Gessner editions.³⁴ De Laet also quotes regularly from his own work, *Novus Orbis*, which is a commented and illustrated anthology of the major authors on the Americas, among whom Thevet, Léry, and, very important for his annotations, Francisco Ximénez.³⁵ This is of course a form of self-promotion, but it also suggests the possibility of extrapolation of Marcgraf's work, as is explained in De Laet's *Preface*: Marcgraf's text should be a model to follow for new studies on other parts of America.³⁶ I will come back to this.

De Laet's annotations mostly serve to specify Marcgraf's observations, and sometimes to discuss and correct them. They also allow De Laet to enlarge the attractiveness of the treatise by giving further intriguing details on the animals under discussion. This is especially the case with some of Marcgraf's descriptions of birds and mammals, like the toucan, the hummingbird, and the peccary. In his annotation on the toucan, De Laet mentions a strange enormous bill of an unknown bird that he possesses in his *Wunderkammer* (which was probably of a hornbill from the East Indies). Marcgraf's description of the hummingbird leads him to discuss the presumed six-month hibernation of the bird during the rainy season. And the alleged navel on the back of the peccary makes him dissect a peccary that he received in the Low Countries.

The Illustrations

The zoological illustrations are by Marcgraf himself, and made *ad vivum*, as is explicitly said in his *Dedication* to Johan Maurits and repeated in De Laet's *Preface to the Reader*. These illustrations were colored in accordance with the very precise color-indications in Marcgraf's descriptions, as can be concluded from the brief remark made by De Laet in his annotation on the cornetfish ("we have seen Marcgraf's colored drawing of the fish").

Marcgraf's bird illustrations are in a very atypical style. In the cases where his bird illustrations are reproduced and put together with other illustrations, such as in the books by Jonston and by Willughby and Ray, Marcgraf's illustrations are immediately recognizable: his birds have a stiff attitude, staring eyes, and disproportionally small feet. Sometimes they are confusingly clumsy, as is the case with the Brazilian nightjar: the curious representation of the bird's beak is only understandable when the reader-spectator notices that the bird has its mouth wide open.³⁷

By their naive crudity, the bird illustrations are the umpteenth sign of the author's autoptic perspective. However, the illustrations of the other

animals (fish, mammals, reptiles, mollusks, and insects) are much less naive; in the case of the fish, they are even of high quality, as was correctly noticed by Georges Cuvier, as we shall see.

The origin of the illustrations is a complicated affaire. Marcgraf claims that he made them himself, but De Laet admits that he inserted some illustrations of his own. To be more specific, of the 86 fish illustrations, four are not made by Marcgraf: two of them are new (Mucu and Abacatuaia), the two others (Guaperua and Guaracapema) came from De Laet's *Novus Orbis*.³⁸ These four illustrations replace Marcgraf's own drawings, probably not for financial reasons (although reusing De Laet's two woodcuts is indeed much cheaper), but because De Laet's illustrations were simply superior. As far as I can see, in the other zoological chapters there are no other illustrations coming from De Laet's work.

A more important question is whether the watercolor drawings, conserved in the so-called *Libri Principis* (now in Kraków), often ascribed to Marcgraf, are indeed by him and were used by De Laet for the illustrations of the HNB. My provisional answer is twice "no," and by this I go against a generally accepted opinion, recently reformulated by Rebecca Parker Brienén.³⁹ For my argumentation it is necessary to turn to the bird illustrations and to focus on an (at first glance) insignificant detail in the description of the trogon (*Trogon spec.*).⁴⁰ Marcgraf emphasizes that the bird's feet resemble the feet of a parrot, i.e. with two toes in front and two toes behind. This observation is zoologically correct and is properly rendered in the bird's illustration (Figures 6.2 and 6.3).

However, this disposition of the toes does not correspond to the one found in the *Libri Principis*.⁴¹ Here, the trogon's toes are clearly disposed in the "normal" but wrong way: three toes in front, one behind (see Figure 6.4).

It is noticeable that this error reoccurs at least three other times in the *Libri Principis*, namely in the case of an indefinable woodpecker, an indefinable owl, and a Spot-backed Puffbird (*Nystalus maculatus*).⁴² Correctly depicted in the HNB,⁴³ these birds' toes are wrongly rendered in the *Libri Principis*. Moreover, in the watercolor, the trogon (which is a tree-bird and seldom sits on the ground) has been placed in such a way that its tail must hinder him.

There is a second argument that confirms my hypothesis. The trogon depicted in the *Libri Principis* has a white collar: this suggests that the species depicted is a Collared Trogon (*Trogon collaris*). But the distinctive white collar, so characteristic for this bird, is not mentioned in Marcgraf's accurate description. This implies that Marcgraf's trogon probably is another (closely related) species, namely the Blue-capped Trogon (*Trogon curucui*). This identification is supported by the trogon painted by Albert Eckhout (1610–1665) in one of his oil studies, collected in the *Theatrum Rerum Naturalium Brasiliae* (now also in Kraków),⁴⁴ which is unmistakably a blue-capped trogon,⁴⁵ depicted, by the way, with a correct position of the toes. Eckhout's watercolor bears the inscription "Curucua;" this

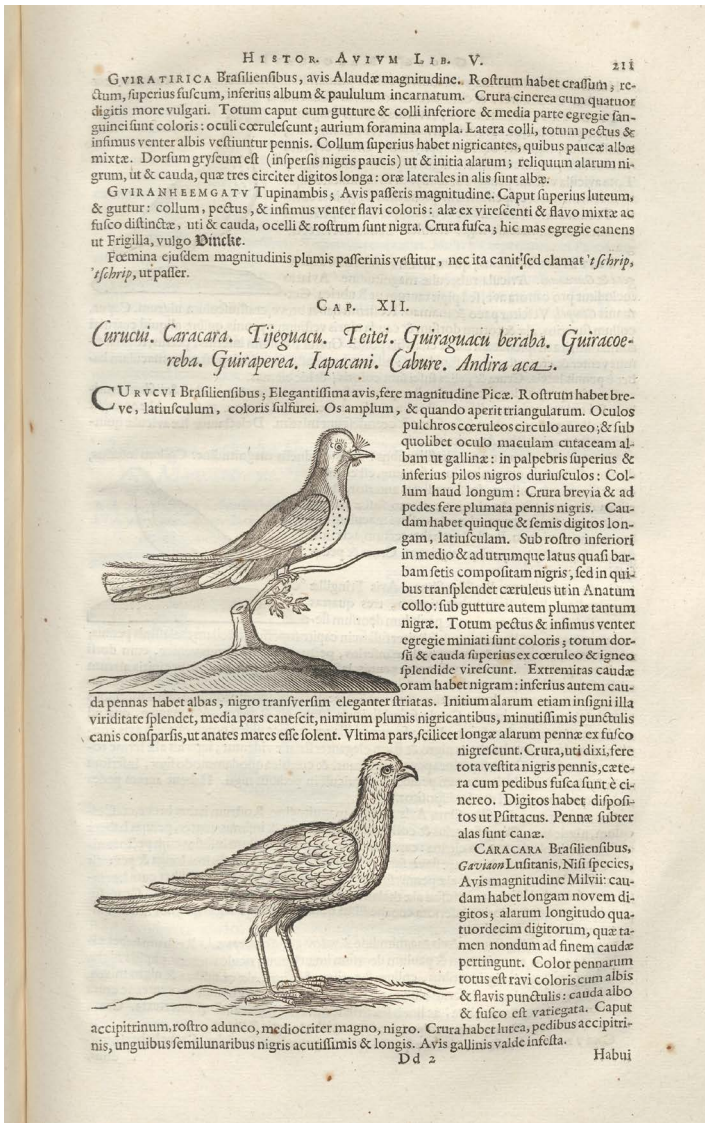


Figure 6.2 Trogon in *Historia Naturalis Brasiliae* (Piso and Marcgraf, 1648: part II, 211). Leiden University Libraries (copy THYSIA 2274).

corresponds to Marcgraf's naming of the bird: "curucui." Moreover, it appears that not only the blue-capped trogon is known to Eckhout, but also the collared trogon. Indeed, Eckhout, or someone from his direct entourage, depicted a collared trogon on one of the ceilings of the Lusthaus Hoflössnitz at Radebeul. This bird is not called "Curucua" but bears another name: "guirapotiapiirangaiupar." This means that the depiction of



Figure 6.3 Trogon, detail of feet, in *Historia Naturalis Brasiliae* (Piso and Marcgraf, 1648: part II, 211). Leiden University Libraries (copy THYSIA 2274).

the trogon in the *Libri Principis* is doubly erroneous: not only does it have a wrong position of the toes but also a wrong name. This double mistake could not have been produced by the accurate observer Marcgraf.⁴⁶

The erroneous identification is a fruitful one: it has been repeated in at least two hand-colored copies of the HNB, one of which is in the Leiden University Libraries (see Figure 6.5).



Figure 6.4 Trogon, watercolor, in *Libri Principis* (*Libri Picturati* A 36: f. 204). Jagiellonian Library (NDIGGRAF001151).



Figure 6.5 Trogon, colored, in *Historia Naturalis Brasiliae* (Piso and Marcgraf, 1648: part II, 211). Leiden University Libraries (copy 1407 B 3).

This implies that the hand-coloring of these copies was not based on Marcgraf's watercolor drawings (which are now lost), but on the *Libri Principis*. This corresponds with the mention of a colored copy of the tome in the auction catalogue (1668) of the colorist and "kaartafzetter" Frans Koerten (1600–1668). According to this catalogue, the coloring of this copy was modeled upon the original copy of the Prince ("volgens

't Princelijck Originael curieus afgeset") – by which undoubtedly the *Libri Principis* were meant.⁴⁷

A third and final argument for my hypothesis is the style of the watercolors. Their coloring and uniform style do not correspond to the style of naturalist sketches, made on the spot. Nor are these watercolors meant for the engraver. Rather, they seem to be meant to be put and bound into an album on animal motifs, especially made for Johan Maurits. In this respect, this album belongs to the genre of the animal-albums, a genre that flourished since the 1560s, of which the so-called bestiary of emperor Rudolf II (1552–1612) is one of the best-known examples.⁴⁸

A Well-Orchestrated Strategy

These illustrations make us aware of the role of the HNB in the well-orchestrated strategy of personal, political publicity, meant to confirm the merits and the achievements of the Dutch governor of Brazil, Johan Maurits, upon his return to the Netherlands. Johan Maurits could indeed easily be blamed for the rather unsuccessful Dutch colonial adventure in Brazil. In order to organize his defense, Johan Maurits made use of the most respected intellectuals. He thus appealed to the learned neo-Latin poet Casparus Barlaeus (1584–1648), who wrote a Brazilian cosmography, printed by the prestigious publishing house Blaeu.⁴⁹ Furthermore, as we noted before, a huge, hand-colored map of Brazil was printed under the title *Brasilia qua Parte Paret Belgis* (1647) by the same Blaeu. The two above-mentioned albums, the *Libri Principis* and Eckhout's *Theatrum*, were composed and Frans Post's (1612–1680) first Brazilian paintings were ordered. In their book-historical contribution to this present volume, Alex Alsemgeest and Jeroen Bos demonstrate that Marcgraf's work was published with the utmost care, without printing errors, beautifully illustrated, laid out, and printed. Addressing the tome's distribution, they demonstrate that the treatise was clearly not meant for the free market: its first possessors were highly placed persons in Johan Maurits' network, as well as important scientific institutes. The more important they were, the more they were entitled to receive a hand-colored copy – this explains the presence of such a copy in the Leiden University Libraries.

Legacy and Evaluations

The reception of Marcgraf's work is so widespread and long-lasting that it is not possible to do justice to it in the limits of this brief chapter.⁵⁰ I want to limit myself to some of its zoological aspects addressed above, in order to see how they have been evaluated by some of his most famous readers. Some of these readers literally copied the individual descriptions in Latin, and in the case of the *Ornithology* (1678) by Francis Willughby and John Ray, all the bird descriptions are literally translated into English.⁵¹ Marcgraf's readers remain

silent on his atypical *dispositio* and his lack of classification. Frederik Ruysch, in his *Theatrum*, follows the general structure he found in both Jonston and Marcgraf, based on the four elements, but he tries to bring in some order in the classification of the individual Brazilian species described by Marcgraf. Willem Piso, who was primarily interested in the medicinal and alimentary aspects of the animals, makes a selection of Marcgraf's animals and he also tries to order them according to a logical disposition.⁵² Willughby and Ray in their books on birds and fish try to incorporate Marcgraf's fish and birds into their own sophisticated classifications.⁵³ From Willughby and Ray on, Marcgraf's findings were extrapolated to other parts of Latin America and beyond. In Willughby and Ray's section on the fish of the Far East, based on the findings of Johan Nieuhof, explicit references were given to Marcgraf's descriptions. In the eighteenth century, after Ruysch's *Theatrum*, Marcgraf's part of the HNB was no longer literally quoted, but incidentally incorporated in a (very) condensed form (Artedi (1705–1735) and Linnaeus (1707–1778)), or in (critical) paraphrases as did the German ichthyologist Bloch, or with stylistic embellishments as did Buffon.

More problematic were Marcgraf's zoological illustrations. Jonston, Willughby and Ray, and Ruysch were the last to produce them automatically without changes; their successors tried to find solutions for the scientific and esthetic shortcomings of the illustrations. In eighteenth-century France, in any case for the birds and mammals, they were not needed anymore, because most of Marcgraf's birds and mammals were to be seen in the enormous collection of the scientist René Antoine Ferchauld de Réaumur (1683–1757), which was later confiscated and entered into the Royal Collection. This collection found its way through the lavishly illustrated natural histories on mammals and birds by Brisson and Buffon. Marcgraf's fish illustrations remained problematic. For example, Bloch was heavily disappointed by both the technical and the ichthyological qualities of Marcgraf's woodcuts. He compared these woodcuts to the watercolors of the *Libri Principis*, which he consulted in the Royal Library at Berlin (and which, by the way, he ascribed to Johan Maurits himself). Consultation of the watercolors made him decide to turn to these albums for his description and illustration of Marcgraf's above-mentioned yellowtail snapper.⁵⁴ And he blames the bad quality of both Marcgraf's description and illustration for the fact that Artedi and Linnaeus did not incorporate the yellowtail snapper in their systems.⁵⁵ But for the cornetfish, he found not only Marcgraf's description and the woodcut insufficient,⁵⁶ but also Johan Maurits' watercolor. He therefore based himself for his illustration on three specimens of the fish he found in a collection in Leipzig.⁵⁷

Georges Cuvier did not agree with Bloch on the scientific qualities of Marcgraf's woodcuts. In his authoritative *Tableau Historique des Progrès de l'Ichthyologie, depuis Son Origine jusqu'à Nos Jours*, he wrote: "the drawings are quite recognizable, despite the fact that they are simple wood engravings."⁵⁸ Because he felt skeptical about Bloch's interpretation of Marcgraf's

illustrations, he sent his assistant and later successor Achille Valenciennes (1794–1865) to Berlin in order to copy the fishes from the *Libri Principis*, and with success. Cuvier wrote: “Valenciennes obtained permission from the conservators of the library to copy these collections, and we are today able to compare them with Bloch’s copies and with nature and definitely fix the genera and species to which each fish should be referred.”

With Cuvier, the zoologist turns into a comparative art historian, who is not afraid to cross national boundaries. Cuvier’s interdisciplinary and transnational approach to Marcgraf can serve as a shining example for the actual historian of science – even if, in this present case, Cuvier was unaware of the unreliability of the *Libri Principis*.

Notes

- 1 This chapter originates from the research project *A New History of Fishes: A Long-Term Approach to Fishes in Science and Culture, 1550–1880*. This project is based at Leiden University and is funded by the Dutch Organisation for Scientific Research (NWO).
- 2 Georges Cuvier, *Historical Portrait of the Progress of Ichthyology, from Its Origins to Our Time*, trans. A.J. Simpson, ed. T.W. Pietsch (Baltimore, MD: Johns Hopkins University Press, 1995 [1828]), 47.
- 3 His herbariums are now kept in the Natural History Museum of Denmark in Copenhagen.
- 4 Anthony Grafton, *New Worlds, Ancient Texts: The Power of Tradition and the Shock of Discovery* (Cambridge, UK: Harvard University Press, 1992).
- 5 Neil Safier, “Beyond Brazilian Nature: The Editorial Itineraries of Marcgraf and Piso’s *Historia Naturalis Brasiliae*,” in *The Legacy of Dutch Brazil*, ed. Michiel van Groesen (New York, NY and Cambridge, UK: Cambridge University Press, 2014), 168–186.
- 6 Michel de Montaigne, *The Essays*, trans. and ed. M.A. Screech (London, UK: Allen Lane – The Penguin Press, 1991), 228–231.
- 7 Unless indicated otherwise, all translations in this chapter are my own.
- 8 Jan Jonston, *Historiae Naturalis [...] Libri*, 4 volumes (Frankfurt: Matthaeus Merian, 1650); ed. Hendrik Ruysch, *Theatrum Universale Omnium Animalium: Piscium, Avium, Quadrupedum, Exanguium, Aquaticorum, Insectorum, et Angium* (Amsterdam: Wetstein, 1718).
- 9 Recent publications on Hoefnagel include: Thea Vignau-Wilberg, *Joris and Jacob Hoefnagel: Art and Science around 1600* (Berlin: Hatje Cantz Verlag, 2017); Marissa Bass, “Mimetic Obscurity in Joris Hoefnagel’s Four Elements,” in *Emblems in the Natural World*, ed. Karl A.E. Enenkel and Paul J. Smith (Leiden and Boston, MA: Brill, 2017), 521–547.
- 10 André Thevet, *Singularités de la France Antarctique* (Paris: par Maurice de La Porte, 1557); Jean de Léry, *Histoire d’un voyage faict en la terre du Bresil, autrement dite Amérique* (La Rochelle: Chuppin, 1578).
- 11 Willem Piso and Georg Marcgraf, *Historia Naturalis Brasiliae: In qua non tantum Plantae et Animalia, sed et Indigenarum Morbi, Ingenia et Mores Describuntur et Iconibus supra Quingentas Illustrantur* (Leiden and Amsterdam: Elsevier, 1648), part II, 148–149.
- 12 Aldrovandi indeed reproduces Belon’s illustration of the *acus minor*: Ulisse Aldrovandi, *De Piscibus Libri V. et De Cetis Lib. Unus*, ed. 2 (Bologna: Apud Bellagumbam, 1658), 138.

- 13 Piso and Marcgraf, *Historia Naturalis*, part II, 166.
- 14 Alexander De Bruin, *Frans Post: Animals in Brazil* (Amsterdam: Rijksmuseum, 2016), 29–35.
- 15 See also Willemsen in this volume.
- 16 Piso and Marcgraf, *Historia Naturalis*, part II, 148.
- 17 Ibid, 181. This fish is called “hamerkophaai” in modern Dutch, and “hammer-head shark” in English.
- 18 Ibid, 143; see also Ibid, 169. This is the first mention in ichthyology of the name Jacob Evertsen. Jacob Evertsen was a historical figure: a sailor, a man of little stature with a pockmarked face. See L.B. Holthuis, who found this ironic name in Jacobus Bontius, “Historiae Naturalis & Medicae Indiae Orientalis Libri Sex,” in *De India utriusque Re Naturali et Medica, Libri Quatuordecim Quorum Contenta Pagina Sequens Exhibit*, Willem Piso (Amsterdam: Elsevier, 1658), 1–226. See Lipke Bijdeley Holthuis, “Who Was Jacob Evertsen? Search for the Identity of the Godfather of Some Spotted Groupers (Pisces: Serranidae: Epinephelinae),” *Zoölogische Mededelingen Leiden* 69, no. 6 (1995): 73–78.
- 19 Piso and Marcgraf, *Historia Naturalis*, part II, 151.
- 20 Ibid. For some other examples, see 151, 152, 169.
- 21 Ibid, 196, 207, 200.
- 22 Ibid, 216. The bird in question is the Great Kiskadee (*Pitangus sulphuratus*).
- 23 For some examples, see Paul Smith, “On Toucans and Hornbills: Readings in Early Modern Ornithology from Belon to Buffon,” in *Early Modern Zoology: The Construction of Animals in Science, Literature and the Visual Arts*, ed. Karl Enenkel and Paul Smith (Leiden and Boston: Brill, 2007), 111–112.
- 24 “Ein Trostel” (Piso and Marcgraf, *Historia Naturalis*, part II, 208); “Gympel” (Piso and Marcgraf, *Historia Naturalis*, part II, 215).
- 25 Piso and Marcgraf, *Historia Naturalis*, part II, 204, 205, 205, 209.
- 26 Jonston, *Historiae Naturalis*.
- 27 Ruysch, *Theatrum Universale*.
- 28 Piso and Marcgraf, *Historia Naturalis*, part II, 157.
- 29 For the importance of Marcgraf’s continuous reference to Indigenous knowledge, see Singh and Françoze in this volume.
- 30 Piso and Marcgraf, *Historia Naturalis*, part II, 152.
- 31 Ibid, 164–165.
- 32 Ibid, 159.
- 33 Conrad Gessner, *Historia Animalium Liber III: Qui Est de Piscium et Aquatilium Animantium Natura* (Zürich: Froschauer, 1558).
- 34 Urs B. Leu, *Conrad Gessner (1516–1565): Universalgelehrter und Naturforscher der Renaissance* (Zürich: Verlag Neue Zürcher Zeitung, 2016), 225.
- 35 [Dutch edition:] Johannes de Laet, *Nieuwe Wereldt ofte Beschrijvinghe van West-Indien* (Leiden: Elsevier, 1625); [Latin edition:] Johannes de Laet, *Novus Orbis seu Descriptionis Indiae Occidentalis* (Leiden: Elsevier, 1633); Francisco Ximénez, *Quatro Libros de la Naturaleza, y Virtudes de las Plantas, y Animales que Estan Recevidos en el Uso de la Medicina en la Nueva Espana* (Mexico: Diego López Dávalos, 1615).
- 36 De Laet’s strategy of extrapolation and its success in eighteenth-century Europe have been convincingly addressed by Safier, “Beyond Brazilian Nature.”
- 37 Piso and Marcgraf, *Historia Naturalis*, part II, 195.
- 38 Ibid, 161: *Mucu* and *Abacatuaia*; the two others are to be found in Ibid, 150: *Guaperua*, and Ibid, 160: *Guaracapema*.
- 39 Rebecca Parker Brienen, “From Brazil to Europe: The Zoological Drawings of Albert Eckhout and Georg Marcgraf,” in Enenkel and Smith, *Early Modern Zoology*, 273–314.
- 40 Piso and Marcgraf, *Historia Naturalis*, part II, 211.

- 41 My references are to the facsimile-edition: eds. Cristina Ferrão and José Paulo Monteiro Soares, *Brasil-Holandês / Dutch-Brasil*, 5 volumes (Rio de Janeiro: Editora Index, 1995), vol. I, 63.
- 42 Ferrão and Soares, *Brasil-Holandês*, vol. I, 55, 89; see also Ferrão and Soares, *Brasil-Holandês* vol. II, 42.
- 43 To be exact: the woodpecker is well portrayed by Marcgraf. The owl's left paw is depicted wrongly, but its right paw is correct. With the tailless puffbird, which is also depicted by Frans Post, something strange is going on. Whereas, in reality, the bird has two toes forward and two toes to the back, Marcgraf portrays the bird with four toes forward (Piso and Marcgraf, *Historia Naturalis*, part II, 208). By doing so, he shows his observational qualities: he is well aware that this specimen is malformed, not only by its lacking tail ("Caret cauda"), but also by the atypical position of its toes. All other artists, including Frans Post and the anonymous artist of the *Libri Principis*, portray the bird "normally," with one toe backward and three toes forward. For some of these "normalized" depictions of the bird, see De Bruin, *Frans Post*, 39.
- 44 Eds. Cristina Ferrão and José Paulo Monteiro Soares, *Theatrum Rerum Naturalium Brasiliae, Brasil – Holandes; Dutch – Brazil (Icones Aquatiliium / Icones Volatiliium)* (Rio de Janeiro: Editora Index, 1993), 148.
- 45 The scientific name of the blue-capped trogon – *Trogon curucui* – is based on the Indigenous name, which imitates the call of the bird. This name seems to better imitate the call of the blue-capped trogon than the Indigenous name of the collared trogon.
- 46 On the bird ceiling of Hoflössnitz, see: Peter Mason, "Eighty Brazilian Birds for Johann Georg," *Folk. Journal of the Danish Ethnographic Society* 43 (2001): 103–121; Dante Martins Texeira, "Os Quadros de Aves Tropicais do Castelo de Hoflössnitz na Saxônia e Albert Eckhout (ca. 1610–1666), Artista do Brasil Holandês," *Revista do Instituto de Estudos Brasileiros* 49 (2009): 67–90, doi: [10.11606/issn.2316-901X.v0i49p67-90](https://doi.org/10.11606/issn.2316-901X.v0i49p67-90).
- 47 *Catalogus van een Menighe Treffelijcke Boecken [...] Naergelaten by Wijlen Frans Koerten [...] (Amsterdam: Jacob Lescaijle, 1668)*, 4, lot 40; cf. Alsemgeest and Bos in this volume.
- 48 Marrigje Rikken, "Dieren Verbeeld: Diervoorstellingen in Tekeningen, Prenten en Schilderijen door Kunstenaars uit de Zuidelijke Nederlanden tussen 1550 en 1630" (PhD diss., Leiden University, 2016), 111–144.
- 49 Caspar Barlaeus, *Rerum per Octennium in Brasilia et Alibi Nuper Gestarum sub Praefectura Illustrissimi Comitis I. Mavritii, Nassoviae, &c. Comitis, Nunc Vesaliae Gubernatoris & Equitatus Foederatorum Belgii Ordd. sub Auriaco Ductoris, Historia* (Amsterdam: Joan Blaeu, 1647).
- 50 For some examples of Marcgraf's eighteenth-century readership, see Safier, "Beyond Brazilian Nature."
- 51 Francis Willugby and John Ray, *The Ornithology* (London, UK: Printed by A.C. for John Martyn, 1678).
- 52 Willem Piso, *De Indiae utriusque*.
- 53 Francis Willugby and John Ray, *De Historia Piscium Libri Quatuor* (Oxford, UK: E Theatro Sheldoniano, 1686).
- 54 "Dem Marcgrav haben wir die erste Bekanntmachung dieses Fisches zu verdanken, aber seine Zeichnung ist bey weiten nicht so gut, als die des Prinzen Moritz, die ich hier mittheile." Marcus Elieser Bloch, *Naturgeschichte der ausländischen Fische*, vol. V (Berlin: bey den Königl. Akademischen Kunsthändlern J. Morino & Comp, 1791), 30.
- 55 "Ohne Zweifel sind die nicht genug charakteristischen Beschreibungen und schlechten Abbildungen des Marcgrav und Piso schuld daran, dass Artedi und Liné diesen Fisch in ihre Systeme nicht aufgenommen haben." Bloch, *Naturgeschichte*, 30.

- 56 “Marcgraf hat die Zeichnung des Prinzen Moritz schlecht kopirt, und da er selbige bei seiner Beschreibung zu Grunde legt, so hat diese nichts anders als ungetreu ausfallen können. ... Von Piso an haben alle Naturkundiger der Irrthum des Marcgraf fortgepflanzt”. Bloch, *Naturgeschichte*, 128.
- 57 “Handzeichnung, Bloch, *Fiscularia tabacaria* ... *tabacaria*,” *Humboldt-Universität zu Berlin: Lautarchiv*, accessed 30 May 2022, <https://www.lautarchiv.hu-berlin.de/objekte/historische-arbeitsstelle/20881/>.
- 58 Cuvier, *Historical Portrait*, 47. Mariana Françozo draws my attention to Cuvier's personal copy of Marcgraf's *Historia Naturalis Brasiliae*, with Cuvier's annotations; previously listed for sale on the website of Arader Galleries; listing taken offline before May 2022.