

The Afterlives of Fish Far from Home: (Mis)Representations in the Iconography of Preserved and Printed Pufferfish in 18th-Century Germany

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1 Pufferfish Far from the Sea

In the period of Enlightenment, research in natural history was less concerned with wondrous singularities as in previous centuries, but primarily endeavoured to generate knowledge of general laws of nature by ordering, classifying, and comparing objects.¹ Hence, a coherent systematisation of natural objects became increasingly important in natural collections of the time. The first most cohesive and widely accepted attempt at such systematisation was made by Carl Linnaeus (1707–1778).² In his influential *Systema Naturae* (published in twelve volumes between 1735 and 1768), he differentiates between the Animal, Vegetable, and Mineral Kingdoms and formally introduces binomial nomenclature.³

To research and categorise the world around them, naturalists needed exemplar organisms that could permanently demonstrate which characteristics defined the species as a whole. This approach could only be realised with the help of specimens; individual animals that were chosen as representatives of their conspecifics. The value and credibility of information stored in these

1 Heesen A. te – Spary E.C., “Sammeln als Wissen”, in Heesen A. te – Spary E.C. (eds.), *Sammeln als Wissen. Das Sammeln und seine wissenschaftsgeschichtliche Bedeutung* (Göttingen: 2001) 7–21, here 14. Rijks M., “Fish out of Water. Collecting Aquatic Animals in the Early Modern Period”, in Rijks M. – Smith P.J. – Egmond F. (eds.), *Fish & Fiction. Aquatic Animals between Science and Imagination (1500–1900)* (Leiden: 2020) 48–61, here 49.

2 Siemer S., “Naturkundliches Sammeln im 18. Jahrhundert. Ein Überblick”, in Mieth K.M – Museum Waldenburg (eds.), *Das Naturalienkabinett. Sammeln, Forschen, Zeigen* (Chemnitz: 2011) 42–54, here 51. See also: Trijp D. van, “The Murky Waters of Classification. Ordering Fish in Eighteenth-century Europe”, in Rijks M. – Smith P.J. – Egmond F. (eds.), *Fish & Fiction. Aquatic Animals between Science and Imagination (1500–1900)* (Leiden: 2020) 76–85.

3 This system is still used today providing scientific names for particular species consisting of two parts referring to the genus and species (e.g., *Homo sapiens*).

exemplar organisms vary among different animals. From the perspective of the collectors, fish are, in this regard, a complicated case. Until the aquarium became accessible to a broader public in the middle of the 19th century, it was nearly impossible to keep (especially salt) water creatures alive outside of their natural habitat over a longer period of time.⁴ Additionally, when fish are taken out of the water, their appearance changes dramatically: As life leaves their bodies, their scales and skins lose their shine and their colours fade. Especially bright colours drastically diminish within a few hours and the contrast of their patterns decreases.⁵ In order to study and describe water creatures, it was necessary to find other ways to conserve them, especially for naturalists operating far from the sea. Thus, the characteristics of living fish were transferred into written sources (e.g., notebooks, letters, inventory lists), but also into sketches, drawings and prints. Furthermore, their bodies were physically preserved by transforming them into wet [Fig. 19.1] or dry specimens [Fig. 19.2].⁶ These different kinds of (re)presentation of the animals generated, legitimised and further developed knowledge about fish in and beyond the collection rooms, while also posing several problems.⁷ How can the relationship between these different media, the animals' preserved bodies, the prints⁸ and written descriptions be defined?

Most taxidermic items of the early modern period have not lasted to the present day due to poor preservation techniques that only improved in the late 18th century and, accordingly, documents are frequently the sole witnesses of

4 Further reading: Vennen M., *Das Aquarium. Praktiken, Techniken und Medien der Wissensproduktion (1840–1910)* (Göttingen: 2018). Of course, attempts had been made prior the aquarium; for example, some naturalists contained sweet water fishes temporarily in vessels. Paepke H.-J., "M.E. Bloch's frühe aquatische Versuche. Über einen Pionier der Heimtierhaltung", *T.I. Magazin* 28.129 (1996) 33–36.

5 Schlegel H., "Über das Anfertigen von Amphibien- und Fischbildern", in Nissen C. (ed.), *Die zoologische Buchillustration. Ihre Bibliographie und Geschichte. Band II: Geschichte* (Stuttgart: 1978) 250–252, here 251 and Rijks, "Fish out of Water" 51.

6 It is to be discussed whether all of these "images" are able to represent the living animal properly or, moreover, what exactly can be presented of the animals in the context of collections.

7 Because fish lose characteristics like their colour sometimes within only minutes after leaving the water, they are, until today, an especially difficult animal to conserve. Even with better technology, there barely are attempts to conserve fish taxidermically. It is thus common to use casts, filling the negative moulds and painting on the resulting artificial body. After this process, only a slight trace of the dead fish remains as its organic components are not conserved.

8 Even though drawings chronologically preceded the prints, in this study I focus only on the prints as these synthesise and multiply all the preliminary work and, hence, allow for a spread of knowledge beyond the collections.



FIGURE 19.1 *Tetrodon hispidus*, wet specimen, 18th century, circa 9 cm × 14 cm (glass vessel), Bloch Collection, ZMB_Pisces_4274, Museum für Naturkunde Berlin (Germany)

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what were once magnificent taxidermic collections.⁹ This article focuses on two exemplary collections located in central Europe, far from the sea, both of which are ‘among the oldest existing ichthyological collections in the world’¹⁰ and thus make accessible early modern fish taxidermies. The first, owned by the family Linck, was established and continued in Leipzig (Germany) between 1670 and 1807 and, hence, lasted the entire 18th century.¹¹ The second is the collection of Marcus Elieser Bloch (1723–1799), who started collecting fish only in the late 1770s, but soon composed one of the largest ichthyological collections of his time.¹² Both the Linck and Bloch collections remained unparalleled through centuries in their magnitude and quality.¹³

The universal collection of the pharmacist family Linck comprised, in addition to *scientifica* objects, rarities of botany, mineralogy and zoology. It soon became especially known for its large compilation of snakes, starfish and fish thanks to the family’s scholarly output.¹⁴ This collection was established and furthered over the course of three generations: Around 1670 Heinrich Linck (1638–1717) initiated it, afterwards his son, Johann Heinrich Linck the Elder (1674–1734), and his grandson, Johann Heinrich the Younger (1734–1807), continued their ancestor’s work by preserving and expanding the collection.

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- 9 Bauernfeind R., “Jona und der Hai. Zu einem frühneuzeitlichen Hai-Präparat zwischen Exegese und Naturgeschichte”, *Zeitschrift für Kunstgeschichte* 82 (2019) 166–178, here 167.
- 10 Paepke H.-J., *Bloch’s Fish Collection in the Museum für Naturkunde der Humboldt-Universität zu Berlin: An Illustrated Catalog and Historical Account* (Rugell: 1999) 11 on the Bloch collection. He gives a similar statement about the Linck collection on page 24.
- 11 Engelmann W.E. – Sterba G.W.H., “Über einige interessante Objekte in der Fischsammlung des Linck’schen Naturalienkabinetts”, *Bulletin of Fish Biology* 16.1/2 (2016) 15–32, here 15.
- 12 Paepke, *Bloch’s Fish Collection* 157.
- 13 Unfortunately, both collections (as so many others of that time) faced an untimely end after their owners’ deaths. Since there were no heirs to Johann Heinrich Linck the Younger, the whole collection was auctioned off. The objects were torn from their original architectural context, merged with other collections and were relocated to a newly built museum in Waldenburg, roughly 60 kilometres from Leipzig, where most of the items can still be found today. Due to these rearrangements, however, the provenances of some exhibits remain foggy. Further on the history of the collection: Ross A.S., “Recycling Embryos: Old Animal Specimens in New Museums, 1660–1840”, *Journal of Social History* 52.4 (2019) 1087–1109. Bloch’s collection was also sold after his death and not spared some changes; moving the collection to a smaller space resulted in selling multiple specimens. Further on this: Paepke, *Bloch’s Fish Collection* 20–21.
- 14 More on the Linck collection generally: Beyrich H., “Das Linck’sche Naturalien- und Kunstkabinett aus Leipzig, jetzt in Waldenburg (Sachsen)”, in Grote A. (ed.), *Macrocosmos in Microcosmo. Die Welt in der Stube. Zur Geschichte des Sammelns 1450–1800* (Wiesbaden: 1994) 581–601.

The physician and naturalist Marcus Elieser Bloch was eager to accumulate new insights into natural history, especially where Linnaeus's classification did not suffice.¹⁵ Bloch's effort has often been described as the most influential ichthyological achievement of the 18th century,¹⁶ and entailed collecting a great many fish, ascribing names to new species, and disseminating his knowledge through publications that are still valued today among ichthyologists and laypersons alike. Thanks to Bloch's famous plates of fish illustrations, totaling about 800 in number,¹⁷ many species were presented in vivid colour and impressive detail to a larger audience for the first time.¹⁸ In line with the ideas of the Enlightenment, these universal depictions aimed to synthesise the main characteristics of the described fishes.

Both collections were located far from the sea but in close proximity to each other (with roughly 170 kilometres of distance between them). As both Bloch and the Lincks had the ambition to incorporate the latest research and scientific knowledge into their collecting activities and maintained an international network with other collectors and scholars,¹⁹ it is no surprise that in the Lincks' surviving guest book, there is a record of Bloch visiting their collection in 1789.²⁰ As has been demonstrated by biologists Wolf-Eberhard Engelmann and Günther H.W. Sterba in 2016 for at least two specimens already,²¹ it is entirely plausible that there is a relation between the Linck and Bloch collections to be traced in other fish (depictions) as well.

The current study makes use of a rich material corpus of one particular pufferfish species, then called *Tetrodon hispidus*, in order to understand how the representations of this particular species were generated, influenced the collectors, as well as to shed light on the interplay of the actors and objects

15 The first time Bloch encountered a fish that he could not identify with Linnaeus's system was in 1779, resulting in him describing a moray eel as a new species. Paepke, *Bloch's Fish Collection* 156.

16 Nissen C., *Die zoologische Buchillustration. Ihre Bibliographie und Geschichte. Band II* (Stuttgart: 1978) 153.

17 Paepke, *Bloch's Fish Collection* 18.

18 *Ibidem* 157.

19 For example, Linck the Elder was in contact with, to name only a few, Jacob Theodor Klein from Gdansk (1685–1759) and the well-known Albertus Seba (1665–1736). Beyrich, "Das Linck'sche Naturalien- und Kunstkabinett" 583.

20 Visitor entry 1000 in the Linck family's guest book: Linck Heinrich, *Rerum naturalium amatoribus et admiratoribus qui huic museo praesentiam commodarunt suam officiosam memoriam spondet musei possessor 10. Henricus Linckius* (Leipzig, unpublished: 1767–1809), holding institution: Museum Naturalienkabinett Waldenburg.

21 They discuss two wet specimens as original patterns for Bloch's descriptions of *Chaetodon kleinii* and *Premnas biaculeatus*. Engelmann – Sterba, "Über einige interessante Objekte".

involved. While analysing and comparing the preservations of the fish's bodies as well as depictions in the context of the Enlightenment ambition to generate universal knowledge, the focus lies on the 'afterlife' of the animals;²² that is not on how these animals entered the collections, but the place these fish as *specimens* occupied in the ichthyological discourse. By approaching wet and dry specimens under an art historical lens, I endeavour to demonstrate that examining long-marginalised taxidermy objects as "images" provides valuable insights.²³ This analysis highlights how the knowledge preserved in the taxidermy and other sources relied on each other in a complex process of knowledge production. I attempt to determine whether the knowledge stored in different representations of the pufferfish, and attained by different collectors, remains separated or rather merges. I argue that the various modes of depiction and the knowledge about the species are interdependent and generate (long-lasting) iconographic traditions with a coherent image of the *Tetrodon hispidus*. As will be demonstrated, with specimens showing distinct (and in some cases contradicting) characteristics, especially a publication by Bloch – including a description and print of the pufferfish that claims to be a universal image of the species – lead to long term consequences in establishing an image of this fish in Central Europe.

2 Pufferfish Specimens in 18th-Century Collections

One of the rare fish taxidermies can be found in the *Museum Naturalienkabinett Waldenburg* (Germany) hosting the Lincks' collection today; a dry specimen, staring with round, yellow glass eyes [Fig. 19.2]. From its head to tail fin it is approximately 27 centimetres long and 25 centimetres in height, with an almost triangle-shaped body due to its straight back and saggy abdomen. The object's tough skin is characterised by a dark glaze and wrinkles that merge into drawn-out protrusions towards the bottom. Equally dark, close-fitting spines stand out slightly from the rest of the body, both visually and haptically.

22 Wells A., "History of Animal Collections/Animal Taxonomy", in Roscher M. – Krebber A. – Mizelle B. (eds.), *Handbook of Historical Animal Studies* (Oldenbourg: 2021) 603–618. The animals take on a new existence in that afterlife; from being creatures in their natural habitat outside the human order to existing as the material basis for universal knowledge production.

23 Bauernfeind, "Jona und der Hai" 167–168. Thus, like Robert Bauernfeind, I refer to the discipline's broader understanding as *Bildwissenschaften* (Visual Studies). On this term, see for example: Bredekamp H., "Bildwissenschaft", in Pfisterer U. (ed.), *Metzler Lexikon Kunstwissenschaft. Ideen, Methoden, Begriffe* (Stuttgart – Weimar: 2011) 72–75.



FIGURE 19.2 “*Tetrodon hispidus* LIN. Die Seeflasche aus Indien’, dry specimen, 18th century, circa 27 cm × 25 cm, Linck collection, NAT I 1975 A5, Museum – Naturalienkabinett Waldenburg (Germany)

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The skin structure is distinguishably leathery on top and spikey further down. On the bottom stand, this exhibit is labeled as ‘*Tetrodon hispidus*, LIN. Die Seeflasche aus Indien’. In addition to the species name in binomial nomenclature (‘*Tetrodon hispidus*’), the label lists an abbreviation of Linnaeus (‘LIN.’). Also, a vernacular name (‘Die Seeflasche’) as well as its proposed origin (India) are noted in German.²⁴ This matches an entry in the three-volume index of the Lincks’ collection; the *Index musaei linckiani, oder kurzes schematisches Verzeichnis der vornehmsten Stücke der Linckischen Naturaliensammlung zu Leipzig*, published by Johann Heinrich Linck the Younger in 1783.²⁵ There

24 More information on the origin and authenticity of the label are yet to be determined.

25 Linck Johann Heinrich, *Index musaei linckiani, oder kurzes schematisches Verzeichnis der vornehmsten Stücke der Linckischen Naturaliensammlung zu Leipzig. Erster Theil* (Leipzig, Buchhandlung der Gelehrten: 1783) 59. Unfortunately, the record of the animal in the book published by Linck the Younger does not disclose when the specimen entered the collection. Since the specimen may have been purchased by a family member living before his time, it will henceforth be attributed to the entire Linck family.



FIGURE 19.3 'Tetrodon hispidus LIN. Die Seeflasche aus Indien', dry specimen, 18th century, circa 27 cm × 25 cm, Linck collection, NAT I 1975 A5, Museum Naturalienkabinett Waldenburg (Germany)

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the pufferfish are classified according to Linnaeus's 12th edition of *Systema Naturae*²⁶ as 'schwimmende Amphibien' ('swimming amphibians'), supposedly breathing with external organs and lungs.²⁷

A prominent seam along its chest reveals the taxidermical process of stuffing, rearranging and, thus, appropriating the animal's body.²⁸ The current specimen's state of preservation is modest: On the front side (see Fig. 19.2), there is a hole next to the remaining fin. On the other side [Fig. 19.3], the fin is missing completely and instead of it, there is another, large round hole. The position of the skin at the front of the head suggests a mouth, which is absent. Consequently, this literally gives an insight into the specimen's inside; it is filled

26 Ibidem XIV. According to the preliminary report, he refers to Linnaeus's edition of 1766 as well as its German translation by Philipp Ludwig Stätius Müller of 1773.

27 Beyrich, "Das Linck'sche Naturalien- und Kunstkabinett" 597.

28 This attests to a violent practice. Regarding the specimen at hand, an in-depth inquiry on the conserving process as well as its embedding in colonial practices is yet to be done.



FIGURE 19.4 ‘*Tetrodon hispidus* LIN. Die Seeflasche aus Indien’, dry specimen (detail), Linck collection, NAT I 1975 A5, Museum Naturalienkabinett Waldenburg (Germany)
IMAGE © DOROTHEE FISCHER 2020 | LISA EFFERTZ 2022

with a stuffing of wood wool. The “animal’s” filling only extends to a depth of about 20 centimetres, leaving a flat broad rim of two to seven centimetres in width [Fig. 19.4]. This morphological feature almost bears resemblance to the comb of a rooster. The skin on the lower abdomen is paper-thin, appearing to consist of merely one layer. However, viewed against the light, as in Fig. 19.3, a second layer becomes visible because the adjacent spines of the back – which are slightly offset – shine through.

In the collection space of the Linck family, this specific specimen was, according to the published *Index musaei linckiani*, one of 166 wet and 60 dry

specimens in total.²⁹ As it was then presented 'hung up dry', it could be viewed from different perspectives.³⁰ This presentation evokes thoughts of early modern depictions of so-called *Kunst- und Wunderkammern* where ball-shaped pufferfish were traditionally hung from the ceiling.³¹

Another way of presenting (puffer) fish was (and still is) to preserve them in spirits and display them in glass jars. A great many of these jars can be found in the *Museum für Naturkunde Berlin* (Germany), also housing Marcus Elieser Bloch's collection today. 'There are still about 800 specimens left out of the original 1,400',³² a major amount (almost three quarters) which 'originally consisted of specimens in alcohol, the rest were dried.'³³ One of these wet specimens can be seen in Fig. 19.1, contained in a glass measuring circa nine centimetres in diameter and circa 14 centimetres in height. In contrast to the Lincks' exhibit, it is difficult to perceive the animal's full size and body proportions due to the refraction of light in the transparent glass filled with liquid, which additionally precludes the possibility of touching the animal directly. This wet specimen is more displaying than hiding the fact that the animal is dead; in contrast to the dry specimen, this body is completely enclosed, entrapped rather than exposed, as if it had become a portable commodity in its afterlife. The lifeless skin is coming off in some areas and its eyes are hollow, disclosing that the inside of the body is empty. The specimen's organs have been removed, as a noticeable seam underneath the anal fin indicates. The base colour of its gently spiked skin is pale, but divided into a dark brown and a lighter brown part. In between those, a chocolate brown stripe can be noticed on each side of the body. On the upper side of the body in particular, closer inspection reveals uniform white spots a few millimetres large [Fig. 19.5] – a detail not observable in the Lincks' exhibit. Nevertheless, this specimen is also classified as *Tetrodon hispidus*.

29 This information emerges from an inventory list in the printed index, which was supplemented by handwriting until 1794. Of these objects, 112 wet and 24 dry specimens can still be observed in Waldenburg today. Engelmann – Sterba, "Über einige interessante Objekte" 16. On another pufferfish specimen of the Linck collection: Dreyer N. – Fischer D., "Migration vom Ozean in Wissensordnungen des 18. Jahrhunderts. Ein Kugelfisch-Präparat des Linck'schen Naturalienkabinetts", in Ullrich J. – Middelhoff F. (eds.), *Tierstudien (Tiere und Migration)* 19 (2021): 43–54.

30 Translation of 'trocken aufgeh.', Linck, *Index musaei linckiani* 59.

31 Although the animal has been hung, it does not appear as round in shape, but rather as a flat and elongated fish. This effect is caused by the specimen's creator's intentions. More likely it is due to the physiognomy of this particular animal.

32 Paepke, *Bloch's Fish Collection* 11.

33 Ibidem 30.

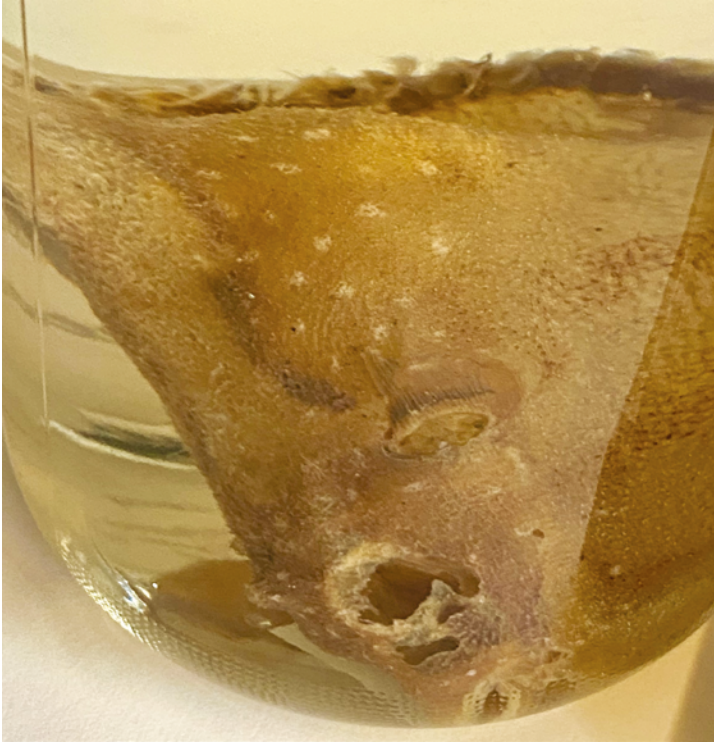


FIGURE 19.5 *Tetrodon hispidus* (detail of Fig. 19.1), wet specimen, 18th century, Bloch Collection, ZMB_Pisces_4274, Museum für Naturkunde Berlin (Germany)

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Next to this wet specimen, Bloch's collection contains a second, dry *Tetrodon hispidus* specimen. Fig. 19.6 shows this almost globe-shaped and brown shaded "fish", currently presented on a wooden base. In total, the short and compact body is roughly 17 centimetres in length and ten centimetres in height. The specimen's blown abdomen is considerably expanded, coloured in a uniform caramel brown, becoming slightly lighter (yellowish-brown) towards the bottom. The specimen's almost monochrome skin is studded with small spines but does not show any white spots. On some parts, the skin has cracked apart, providing a glimpse of the stuffing. In place of the eyes, there are only holes. Resembling lips or even a bird's beak, the animal's dental plate conspicuously protrudes from the upper body.

These three fish representations could not be more different, yet they all are classified as the same species, *Tetrodon hispidus*, after Linnaeus. Comparing the three individual specimens demonstrates the variety of differences and issues in presenting the animals' bodies out of water in their afterlives far from home.



FIGURE 19.6 *Tetrodon hispidus*, dry specimen, 18th century, circa 17 cm × 10 cm, Bloch Collection, ZMB_Pisces_4275, Museum für Naturkunde Berlin (Germany)
IMAGE © DOROTHEE FISCHER 2022

While all three bodies share basic morphological features like the same number of fins and have in common that their biological sex is not recognisable,³⁴ their appearance and the way they are presented differ significantly.³⁵ The dry specimens showcase the animals' full size and proportions. They emphasise body features like the huge abdomen and heterogeneous skin texture covered with spines. Nevertheless, the mere size difference is remarkable: Bloch's specimen (measuring roughly 10 × 17 cm) is almost half the size of the Linck's exhibit (which is 25 × 27 cm). The body shape of the former resembles a ball while the latter is almost triangular. The former is bulgingly blown, the latter has a skin sack resembling a rooster's comb facing downwards. When looking

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- 34 Even if the pufferfish were still alive, there would be no external characteristics in shape and colour which could help in determining the animal's sex. I would like to thank Wolf-Eberhard Engelmann for this information.
- 35 For biologists, further similarities might be obvious. For laypersons, however, all objects' appearances are substantially different.

closely, the Lincks' specimen has a straight dorsal line, the Bloch's dry specimen has a curved back; the area of the head is different as well. Lastly, the Lincks' exhibit stares out with two artificial yellow glass eyes while Bloch's is "blind", having only empty eye sockets.³⁶

In summary, all specimens are brownish but vary in shade. However, the wet specimen's skin shows the most detailed patterns with little white spots that cannot be found in today's appearance of the other two. The morphological features of Bloch's specimens are more or less consistent but contrarily to the shape and size of Linck's exhibit. Consequently, the specimens do not present a clear and cohesive image of what is supposed to be the same species, resulting in an ambiguous idea of what a *Tetrodon hispidus* looks like. What they do have in common, however, is their display in European collections and, hence, their function as physical proof of the species' existence. Moreover, these exhibits once were individual pufferfish swimming in distant oceans. So, what we observe are products of appropriation processes entangled in anthropocentric as well as Eurocentric hegemonies, which merit further investigation in future studies.

3 Pufferfish in Print

Marcus Elieser Bloch's work *Naturgeschichte der ausländischen Fische* (in English: 'Natural history of foreign fish')³⁷ serves the purpose of portraying fish in a scientific manner by presenting the common properties of individuals in a species. This book was published in nine parts and three plate volumes between 1785 and 1795, combining descriptions and depictions of 'foreign' fish. Later on, Bloch merged this with his earlier work on fish of the Prussian states (*Oeconomische Naturgeschichte der Fische*, published between 1782 and 1785) into the *Allgemeine Naturgeschichte der Fische*.³⁸ This encyclopaedia became known as 'the most important ichthyological work of the century'.³⁹ In this

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- 36 Considering the rest of Bloch's collection, it is unlikely that his specimen ever had glass eyes. In the case of the Lincks' exhibit, it would be necessary to analyse the glass eyes of the specimen thoroughly to determine whether they were perhaps added later and if so, when.
- 37 Bloch Marcus Elieser, *Naturgeschichte der ausländischen Fische. Mit sechs und dreissig ausgemalten Kupfern nach Originalen. Erster Theil* (Berlin, Marcus Elieser Bloch: 1785).
- 38 Paepke, *Bloch's Fish Collection* 157. Translations of the titles: *Economic Natural History of Fish* and *General Natural History of Fishes* (by D.F.).
- 39 Nissen, *Die zoologische Buchillustration* 153.

opus magnum based on Linnaeus's principles,⁴⁰ he described about 500 fish species of which 267 were previously unknown to the scholarly world.⁴¹ It alone includes 432 plates with depictions of fish.⁴²

Bloch's *Naturgeschichte der ausländischen Fische* offers a detailed written description of *Tetrodon hispidus* which he legitimises by making references to earlier "ichthyological" works, namely by Pierre Belon (1517–1564), Guillaume Rondelet (1507–1566), Conrad Gessner (1516–1565), Ippolito Salviani (1514–1572) and Ulisse Aldrovandi (1522–1605).⁴³ Next to the fish's physiognomy, Bloch describes their colours:

Der Körper ist kurz, und wenn der Bauch aufgeblasen ist, ausserordentlich dick; man könnte daher züglicher sagen, der Fisch sei ganz Bauch, als mit Plinius, daß er ganz Kopf sei a). Der Kopf ist klein, die Lippen am Munde stark, und die Nasenlöcher ohnweit [sic!] den Augen; letztere sind klein, haben einen schwarzen Stern, der von einem goldenen Ringe umgeben wird. Der Rücken ist rund, der Schwanz kurz, und auf den Seiten ein wenig zusammengedrückt. Der ganze Körper ist bis auf den Schwanz dicht mit kleinen Stacheln besetzt. Die Grundfarbe des Fisches ist weißgrau, der Rücken [sic!] bräunlich, und auf beiden Seiten nimmt man verschiedene Streiffen [sic!] von ähnlicher Farbe wahr. Sämmtliche [sic!] Flossen sind klein, von grauer Farbe, und mit vielzweigigen [sic!] Strahlen versehen. Wir treffen diesen Fisch im mittelländischen und ostindischen Meere, auch im Nilstrom an. Er wird einen bis zwey [sic!] Fuss lang [...].

The body is short, and when the belly is inflated, [becomes] extraordinarily big; one could therefore say more briskly that the fish is all belly, [contra] with Pliny that it is all head a). The head is small, the lips at the mouth strong, and the nostrils not far from the eyes; the last [i.e. the eyes] are small, consisting of a black star surrounded by a golden ring. The back is round, the tail short and a little compressed on the sides. The whole body, except for the tail, is densely covered with small spines. The basic colour of the fish is whitish-grey, the back is brownish, and on both

40 Paepke, *Bloch's Fish Collection* 19.

41 Ibidem 157.

42 Nissen C., *Die zoologische Buchillustration* 153. More information about the artists can be found here as well.

43 Bloch, *Naturgeschichte der ausländischen Fische* 130, 131, 132. He is also criticising previous authors by discussing the shortcomings of the preceding iconography of *Tetrodon hispidus* in their works. Ibidem 131, 132.

sides, one perceives various stripes of a similar colour. All the fins are small, of grey colour, and with many-branched rays. We find this fish in the Mediterranean and East Indian seas, also in the Nile River. It grows one to two feet long [...].⁴⁴

This description of a one to two feet long fish with a white-greyish overall colour, brownish back, grey fins and stripes does not entirely match today's appearances of any of the three specimens. However, the 'brownish back' is a feature that all specimens exhibit. The described overall colouration and pattern are not shown on either one of the dry specimens, but do resemble the wet specimen. Its white spots, however, are not mentioned in this paragraph.

A remarkable similarity of the description to the Bloch specimens is the portrayal of the fish's body as 'short' compared to the Lincks' exhibit. The Lincks' *Tetrodon hispidus*, even though fitting a size of 'one to two feet', is arguably not 'short' in length, nor in a relative sense compared with its height. It also has no 'round back' and is overall significantly different in its body shape. It shows almost no resemblance except for the 'golden ring' around the eye (with its yellow glass eyes). In this case, the relation between the written description and the individual specimens on display does not indicate a direct correspondence between the two modes of representing the species. Although the text describes the sum of Bloch's specimens, it is impossible to map his description onto the characteristics of any of the three exhibits into a coherent image of the *Tetrodon hispidus*.

In addition to the written descriptions, detailed hand-coloured copperplate prints can be found in the same book. These images mirror the whole species, showing its main features in a stylised manner, synthesising all the characteristics of a species and thus also serving as a practical tool for classifying animals visually. Unlike *particular* specimens, these images do not constitute proof that what is being depicted actually exists; rather, they provide a *general* and schematic representation devoid of individuality. Moreover, unlike specimens, they can be reproduced and disseminated widely.

As one of these illustrations, plate 142 [Fig. 19.7] shows a creature from a side profile, protruding clearly from the colourless blank ground. With dark letters contrasting the light paper background, the lettering in the upper right corner reveals not only the plate number but also a scientific categorisation reading 'TETRODON HISPIDUS'. Below this Latin reference to Linnaeus's systematisation, three more lines with the animal's naming in German ('Der Seekröpfer'),

44 Bloch, *Naturgeschichte der ausländischen Fische* 131. Translation by D.F.

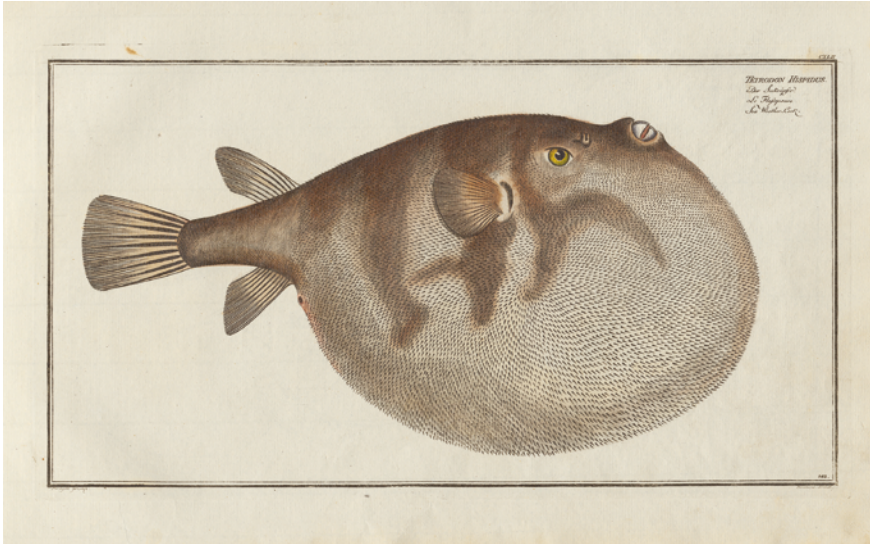


FIGURE 19.7 Johann Friedrich August Krüger jun. (inventor) and Ferdinand Schmidt (engraver), *TETRODON HISPIDUS*, copper engraving, Plate 142. From: Bloch Marcus Elieser, *Naturgeschichte der ausländischen Fische. Mit sechs und dreissig ausgemalten Kupfern nach Originalen. Ersther Theil* (Berlin, Marcus Elieser Bloch: 1785)

IMAGE SOURCE: ZENTRALBIBLIOTHEK ZÜRICH, URL: [HTTPS://WWW.E-RARA.CH/ZUZ/DOI/10.3931/E-RARA-54281](https://www.e-rara.ch/ZUZ/DOI/10.3931/E-RARA-54281) (22/03/2022)

French ('flascopsaro') and English ('Sea Weather Cock') in a different font testify to the internationality of the scientific community (or at least that the author intended a broad group of recipients). These indicate that this image is a representation of the same species, *Tetrodon hispidus*, as the specimens of Bloch's collection [Figs. 19.1 and 19.6] and the dry specimen of the Lincks' [Figs. 19.2–19.4] above. To the viewer's left, a rigid, fanned tail fin is attached to a narrow, smooth, dark-coloured tail. To the right-hand side is a short, round body that makes up most of the animal, which is covered in small spines, depicted as short strokes. Its lateral fin, an almost round yellow eye and slightly opened, beak-like lips are located in the upper right quarter of the animal. As if swollen, the chest and abdomen of this fish stretch out to be disproportionately large underneath. Its colour shows different shades of brown, except for a yellow eye, a pinkish coloured cloaca, as well as a mouth that stands out from the monochrome colouring. The white reflection in the eye and its pupil transports a vivid impression. From the back to the middle of the body, dark brown patterns extend to the underside of the animal, reaching its abdomen in asymmetric, curved stripes.

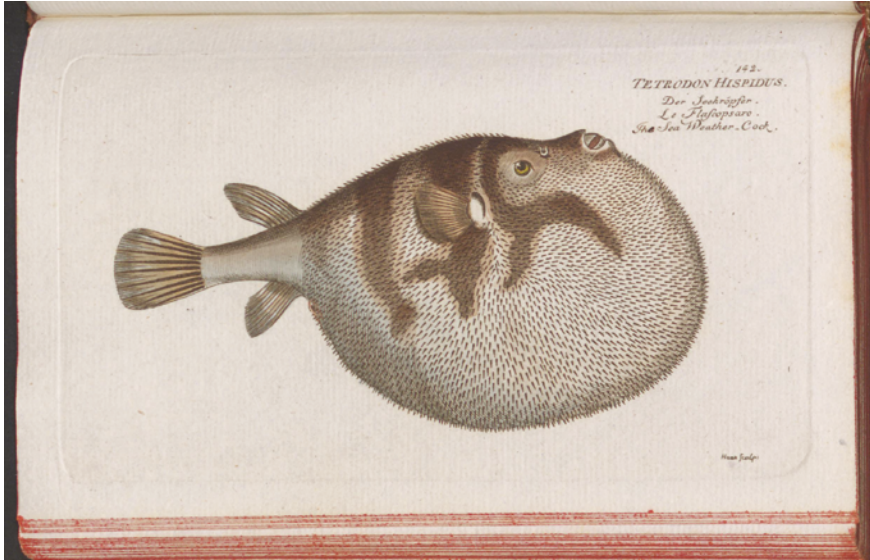


FIGURE 19.8 Peter Haas (engraver), *TETRODON HISPIDUS*, copper engraving, Plate 142. From: Bloch Marcus Elieser, *Naturgeschichte der ausländischen Fische. Mit sechs und dreissig ausgemalten Kupfern nach Originalen. Erster Theil* (Berlin, Marcus Elieser Bloch: 1785)

IMAGE SOURCE: UNIVERSITÄTSBIBLIOTHEK FREIBERG – SLUB DRESDEN,
 URL: [HTTP://DIGITAL.SLUB-DRESDEN.DE/ID480651450/73](http://digital.slub-dresden.de/id480651450/73) (10/10/2023)

Comparing this with another edition of the print at hand, signed by the engraver Peter Haas [Fig. 19.8], further discoveries can be made. Its composition is the same as in Fig. 19.7, the spines of the pufferfish, however, are evoking a more haptic illusion as they are depicted less in number but thicker and slightly longer. This indicates another artist's hand, supposedly transferring the protruding spines of their model more dominantly into this illustration. Although there are slight differences in the depiction, like the almost hedgehog-like spines, a lighter coloured tail and the fish's eye, it is clearly referring to the same model image. This image could partly be derived by the written description of the *Tetrodon hispidus*. However, merely from the description these pictures could not have been constructed since the text lacks details with respect to body proportions, shapes of the fins and patterns.

Bloch himself left Germany only occasionally and travelled little. As a non-travelling naturalist, his immense collection emerged through his significant exchanges of goods, letters and knowledge.⁴⁵ Regularly, he relied on previous

45 For further information on Bloch's Biography: Paepke, *Bloch's Fish Collection*, especially 14–16. European naturalists like Bloch mostly came into possession of information about

books and drawings from authors like Charles Plumier (1646–1704) to synthesise existing knowledge as well as new self-made discoveries on fish into coherent representations. Bloch was meticulous in citing these external sources, with particular respect and praise for Plumier's descriptions.⁴⁶ However, the majority of Bloch's illustrations was based on eyewitnesses' descriptions and/or wet and dry preparations and *not*, as with previous fish books, on copies by other authors only.⁴⁷ He was confident in the completeness of his own collection and its function as the material basis of his scientific inquiries, and, ultimately, as the foundation of his written descriptions and illustrations.⁴⁸

As Bloch's interest was not merely in collecting specimens but in generating ichthyological knowledge, he also relied on specimens from other collections on the occasion that his possessions were insufficient. One of them was the Lincks' in Leipzig; as Bloch notes in his publications more than once, he sent his painters to their collection to use specific specimens as models for his illustrations.⁴⁹ For the species of *Chaetodon Kleinii* (sunburst butterflyfish), as an exemplar case, the depiction was made of a bigger specimen from the collection of the Lincks since Bloch's specimen did not meet his own quality requirements.⁵⁰

animals as well as specimens from a distance, acquired by way of the missionary colonies in these regions, by post or by buying them off merchants. Paepke, "M.E. Bloch's frühe aquatische Versuche" 34.

- 46 Bloch, *Naturgeschichte der ausländischen Fische* and Pietsch T.W., "Charles Plumier (1646–1704) and his drawings of French and American Fishes", *Archives of Natural History* 28.1 (2001) 1–57, here 8.
- 47 Bloch, *Naturgeschichte der ausländischen Fische*, preface. As Florike Egmond and Sachiko Kusukawa demonstrated in 2019, already Gessner commissioned fish drawings that were based on preserved specimens. They specifically mention the drawing of a pufferfish 'depicted after dried exemplars'. Egmond F. – Kusukawa S., "Gessner's Fish: Images as Objects", in Leu U. – Opitz P. (eds.), *Conrad Gessner (1516–1565). The Renaissance of Learning* (Berlin – Boston: 2019) 581–606, here 584. Thus, at least since the 16th-century specimens functioned as models and given that there was no major innovation in keeping exotic fish alive at the time and with the examples at hand this was still the practice circa two hundred years later.
- 48 Paepke, *Bloch's Fish Collection* 24, 157.
- 49 See exemplarily: Bloch, *Naturgeschichte der ausländischen Fische* vol. 4, 10, 12; vol. 5, 140.
- 50 Bloch, *Naturgeschichte der ausländischen Fische* vol. 4, 8. 'Dieser Fisch gehört in Ostindien zu Hause: Seine eigentliche Größe kann ich nicht angeben, denn ich besitze nur ein kleines Exemplar; meine Zeichnung aber ist von einem größeren, welches in der vortrefflichen Sammlung des Herrn Commerzienrath Lincke zu Leipzig befindlich ist, genommen worden.' / 'This fish is at home in the East Indies: I cannot state its actual size, for I possess only a small specimen; my drawing, however, was taken from a larger one, which is in the excellent collection of Lincke from Leipzig' (Translation by D.F.). On this specimen also: Engelmann – Sterba, "Über einige interessante Objekte".

In addition to the description of the *Tetrodon hispidus*'s external features and its occurrences, Bloch's text includes different vernacular names, among them 'Seeflasche',⁵¹ the same name as used by Johann Heinrich Linck the Younger.⁵² While this alone is not sufficient evidence for Bloch's incorporation of the Lincks' specimen, it is possible that he was consulting their collection. Another testimony of their relation is Linck the Younger's working copy of the *Index musaei linckiani*, which today is in the collections of *Leipzig University Library*. Next to the entry on the *Tetrodon hispidus*, there is a brief handwritten annotation: 'Bl. T. 142'.⁵³ It is reasonable to assume that 'Bl.' is an abbreviation of the name 'Bloch' and 'T.' stands for the German word 'Tafel' (engl. 'plate'), referring to Bloch's copperplate number 142 as represented in Figs. 19.7 and 19.8. Details like these point to a broader practice in the production and circulation of knowledge amongst collectors fixating and sharing knowledge in different media.

Although Linck the Younger refers to Bloch's print, recalling the Lincks' *Tetrodon hispidus* exhibit [Figs. 19.2, 19.3 and 19.4], no direct connection can be established. The similarities between this specimen and the illustration are rather generic, as only the eye colour, and the contrast in the overall brown colouration (top dark, bottom bright) equate, while they are different in brightness and pattern.⁵⁴ Both, being displayed in side profile, emphasise a huge abdomen, even though remarkably different in shape. The dried specimen's overall form resembles a triangle much more than the ball shape of the illustration. The head is directed to the right, following the straight dorsal line, whereas the printed fish conveys a curved dorsal line leading to an upward shaped mouth, evoking the impression of a slightly upward tilted head.

Unsurprisingly, this comparison yields the same results as the comparison between the written description and the Lincks' exhibit. Consequently, it is not possible to bridge the gap between Bloch's description and the illustration using the Lincks' *Tetrodon hispidus*. In contrast, Bloch's specimens not only resemble the written description but also complement it with regard to the illustration. Even though one cannot see distinguished stripes as in the print, Bloch's dry specimen [Fig. 19.6] is especially a visual match in the overall appearance. The printed fish's shape and proportion, its round back, the small head and the short tail give the impression that the illustration synthesises selected written knowledge and *selected* specimens which altogether reflect a

51 Bloch, *Naturgeschichte der ausländischen Fische* 131.

52 Linck, *Index musaei linckiani* 59.

53 Ibidem.

54 However, the dark colouration of the dry specimens could also be due to age-related darkening.

coherent image of the *Tetrodon hispidus*. The emphasis lies on *selected* as also the white spots of the wet specimen [Fig. 19.5] did not find their way into the printed fish depiction. One possible explanation for this is that Bloch prefers to follow written knowledge⁵⁵ rather than trusting the wet specimen in front of him, supposedly – in contrast to the other dry specimens – considering it an anomaly. Hence, given that previous naturalists had not mentioned them and that, as far as can be judged today, the dry specimens, likewise, did not display any spots, his white-spotted specimen seemed to be an exception and, thus, this characteristic did not seem noteworthy to Bloch.⁵⁶ This would prove that anomalies in an individual were systematically excluded in the interest of generating a universal image of the species.

That pufferfish always show a “typical” round shape is a misconception. Even though they are ‘capable of inflating their abdomens with water’, this only happens ‘when frightened or disturbed’.⁵⁷ While both dry specimens, as well as the prints, display the blown abdomen, in his book Bloch mentions repeatedly that this is a temporary condition.⁵⁸ Thus, scientifically, the text has an advantage over the specimens as well as the illustrations, which are only presenting one moment in time. If the pufferfish is not always blown, what justification is there for an almost ubiquitous iconography that represents the species as inflated? One possible reason is that the pufferfish’s ability to transform its body into a ball shape is the most distinguishing characteristic known in Europe from its century-long presentation in *Kunst- und Wunderkammern*.⁵⁹ Another possibility is its categorisation as a swimming amphibian according to Linnaeus. The inflated depiction would then be in alignment with the idea that they breathe with lung-like organs.⁶⁰ Certainly, as something special about the

55 See footnote 44.

56 This is remarkable though as one would expect him to pass this information on to his readership. Thus, another possibility is, of course, that he was not aware of this feature as the spots are not visible in his dry specimen and the spotted specimen might have only reached Bloch’s collection after his books’ publications. This, however, seems unlikely as other features of the wet specimen did indeed find their way into the printed illustration (e.g., its stripes).

57 Hardy G. – Jing L. – Leis J.L. – Liu M. – Matsuura K. – Shao K., “White-spotted puffer *Arothron hispidus*”, *The IUCN Red List of Threatened Species* (2014), online, URL <https://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T193699A2262231.en> (22/03/2022).

58 Bloch, *Naturgeschichte der ausländischen Fische* 120, 130.

59 Further on in his description, Bloch himself names the *Tetrodon hispidus* as ‘Stachelkugel’ (‘spiky ball’). Bloch, *Naturgeschichte der ausländischen Fische* 132.

60 This body feature leaves room for further research as there are exceptions to this rule when it comes to other species of the pufferfish, which are indeed depicted in Bloch’s book, as well as other pufferfish specimens in both collections in an uninflated state.

species, it ought to be included if it is to be a universal image of the species, showing what makes the entire species unique.

4 Establishing an Iconography of an Un-spotted “*Tetrodon hispidus*”

In order to create illustrations that did justice to the species as a whole and did not merely depict individual specimens, Bloch needed an understanding of what were species-specific and what were individual characteristics of an animal in question. Thus, it was not unusual that the sketches for the later illustrations were based on several sources and exhibits. This seems not to be the case with the particular species of pufferfish under investigation. Although Bloch mentions previous authors, and we know of a connection to the Lincks' collection, there is no direct resemblance between Bloch's written and illustrative work and the Lincks' specimen strong enough to suggest a relation. Most likely, Bloch relied on his own two specimens since they were close to each other in their external features, align with written sources,⁶¹ and appeal to the traditional shape of pufferfish.⁶² It remains to be answered whether this depiction of *Tetrodon hispidus* persists as its most credible “iconography”, in this case meaning a coherent image of the species,⁶³ especially because the Lincks' specimen proposes a different image of the fish species.

As demonstrated above, the Lincks' specimen falls out of line compared to Bloch's specimens as well as his written and pictorial description of *Tetrodon hispidus*. From today's perspective, this is easily explained: The physiognomic features strongly indicate that this specimen was wrongly classified. This “animal” more likely was once a *Triodon macropterus* rather than a *Tetrodon hispidus*.⁶⁴ This species does not have the capability to fully extend

61 His two specimens are, however, significantly shorter than the described length of the fish species (‘one to two feet’) in his written descriptions. Furthermore, as elaborated on above, white spots as on the wet specimen are not mentioned.

62 This observation allows the speculation of whether he possibly wanted to legitimise the truthfulness of his own preparations through their visual proximity.

63 Further on the discourse of iconography see for example: Noll T., “Ikonographie/Ikonologie”, in Pfisterer U. (ed.), *Metzler Lexikon Kunstwissenschaft. Ideen, Methoden, Begriffe* (Stuttgart – Weimar: 2011) 194–198 and especially on animal iconography: Kalof L., “History of Animal Iconography”, in Roscher M. – Krebber A. – Mizelle B. (ed.), *Handbook of Historical Animal Studies* (Berlin: 2021) 471–492.

64 For this enlightening information, I would like to thank Edda Abel and Peter Bartsch from the ichthyological collection in the *Museum für Naturkunde Berlin*. Already in 1999, Beyrich mentioned in passing that this specimen might be a *Triodon bursarius*. Beyrich,

their abdomen but has a bone structure shaping an abdominal crease which explains the shape [Fig. 19.4] and its difference compared to the round abdomen of Bloch's fish. However, as mentioned above, Linck the Younger seemed quite certain that his specimen was indeed a *Tetrodon hispidus* as he not only named it that way, but also added the copperplate number of Bloch's print in his *Index museai linckiani*. This is consistent insofar that the correct species was introduced formally as late as around 1830, long after Linnaeus's publication on which the Lincks' rested upon.⁶⁵ As the classification system did not allow for another interpretation, to the collector standing in front of this specimen, it had to be a *Tetrodon hispidus*. This emphasises not only the difficulties in classifying exotic species in the collectors' rooms far from the fish's natural habitat. Furthermore, it underlines the importance of an encyclopaedic book like Bloch's *Naturgeschichte der ausländischen Fische* for ichthyology as a discipline evolving in the Enlightenment with universalist ambitions.

Bloch implicitly argued in his description that he is introducing a new image of the *Tetrodon hispidus* as the previous ones did not suffice.⁶⁶ As is apparent by looking at earlier depictions of the animal (e.g., Salviani's)⁶⁷ compared to Figs. 19.7 and 19.8, Bloch indeed introduced an innovative image of this fish: Even though the blown abdomen resembles earlier traditions of depicting pufferfish in European collections, his illustration diverges from previous pictures and might gain more credibility by its similarities to his own exhibits. Whereas the print is richer in detail and easy to distribute, the individual specimens are the material witnesses and tangible evidence to both the description and image. Still there is the open question of why the print does not show the white spots, visible on his own wet specimen. It is possible that Bloch deemed this exhibit an anomaly, as the spots are not present on other available specimens or written sources. So, not depicting the spots is an argument for Bloch's approach of providing a universal image of the species as a whole, portraying the *Tetrodon hispidus* as abstract as possible without losing the illustration's purpose as a

"Das Linck'sche Naturalien- und Kunstkabinett" 597. Today this term is valid as *Triodon macropterus*. Froese R. – Pauly D., "*Triodon macropterus* Lesson, 1831", *World Register of Marine Species* (2022), online, URL <https://www.marinespecies.org/aphia.php?p=taxdetails&id=219917> (07/04/2022).

65 Froese – Pauly, *Triodon macropterus* (online).

66 Bloch, *Naturgeschichte der ausländischen Fische* 131–132.

67 In his description of *Tetrodon hispidus*, Bloch praises Salviani's depiction as excellent ('vorzüglich [...]'). Bloch, *Naturgeschichte der ausländischen Fische* 132. Most likely referring to Salviani Ippolito, *Aquatilium animalium historiae, liber primus: cum eorundem formis, aere excusis* (Rome, Ippolito Salviani: 1558) plate 77.

classifying tool. With his work, he incorporates the previous knowledge and thereby inscribes this specific iconography into the scholarly discourse.

What were the long-term consequences of the interplay of different media of representation (specimens and print) in the 18th-century central European mainland, far from the sea? Introducing another *Tetrodon hispidus* might provide an answer. This yet undated dry specimen from the *Naturkundemuseum im Ottoneum* in Kassel (Germany) is about 34 centimetres long and 14 centimetres wide and high [Fig. 19.9].⁶⁸ While its size is closer to the Lincks' specimen it does not share any distinguishing characteristics with it. Its blown abdomen is greyish-beige, its back is brown-yellowish and shows dark brown patterns. Its amber coloured pupils are located next to a white, beak-like dental plate. Its body is strewn with little spines. The exhibit seems, purely from its external features, to have been made after Bloch's illustration and description. The shape is emphasising the blown abdomen while the colouration with the distinguished stripes resembles the Bloch illustration's patterns and description. This would suggest a dating of the preparation, or at least its colouring, to the end of the 18th century at the earliest, or what is more likely, even later than the start of the 19th century. At this point, the preparation's dating remains speculative – unfortunately a common problem with these specimens.⁶⁹

Today, *Tetrodon hispidus* is (re)categorised as *Arothron hispidus*. Directing the gaze away from the collection displays, study rooms and fish books raises the question of the appearance of a living animal and the closeness of this “original” to the representations discussed. The species naturally inhabits reefs, lagoons or estuaries ‘to depths of at least 50 m’⁷⁰ in water temperatures of 25°C and is ‘is widely distributed in the Indian and Pacific Oceans.’⁷¹ It can reach 50 cm in length and its diet consists of algae, corals, crabs and molluscs among other things.⁷² The fish consumes these using the beak-like dental plate. Fig. 19.10 shows a contemporary photograph of *Arothron hispidus* in an

68 The museum's inventory list, which was established in the second half of the 19th century, contains the following entry: “*Tetrodon hispidus*” (heute: *Arothron hispidus* (Linnaeus, 1758), deutsch: Weißfleck-Kugelfisch). Unfortunately, it is not proven if this record corresponds to the specimen in Fig. 19.9. I thank Peter Mansfeld for this information (mail correspondence, 5th August, 2021).

69 In recent years, it is gratifying to observe that (early) modern animal preparations are increasingly being examined, for example by observing their insides with X-rays to gain more information around their origin and manufacturing.

70 Froese R. – Pauly D., “*Tetrodon hispidus* Linnaeus, 1758”, *World Register of Marine Species* (2022), online, URL [https://www.marinespecies.org/aphia.php?p=taxdetails&id=298330\(07/04/2022\)](https://www.marinespecies.org/aphia.php?p=taxdetails&id=298330(07/04/2022)).

71 Hardy – Jing – Leis – Liu – Matsuura – Shao, *Arothron hispidus* (online).

72 Ibidem.



FIGURE 19.9 *Tetrodon hispidus*, dry specimen, undated, circa 34 cm × 14 cm,
Naturkundemuseum im Ottoneum in Kassel (Germany)
IMAGE © PETER MANSFELD 2021



FIGURE 19.10 *Arothron hispidus*, photograph, 21st century
SOURCE: [HTTPS://DE.WIKIPEDIA.ORG/WIKI/DATEI:AROTHRON_HISPIDUS_6.JPG#FILELINKS](https://de.wikipedia.org/wiki/Datei:Arothron_hispidus_6.JPG#filelinks) (22/03/2022)
IMAGE © WIKIMEDIA (FACTUMQUINTUS 2012 | TOGABI 2017)

aquarium. Its tough skin is greyish or brownish on top, depending on the individual's habitat, and becomes, with stripes in the transition zone, white on the ventral part. Every part except for the abdomen is covered with clearly distinguished white spots. That is why *Arothron hispidus* is vernacularly known as the white-spotted pufferfish. These eye-catching white spots confuse when recalling Bloch's description and the previous figures; all but the wet specimen [Figs. 19.1 and 19.5] representing this species with no spots at all.⁷³ It seems that a significant loss of information took place in the process in which the animal 'had to be selected, captured, dried, transported, sold and bought, and then finally put on display [...]'⁷⁴ and so this (mis)representation was distributed in a printed illustration.

To remind ourselves, the previous representations of *Tetrodon hispidus* merged into a print illustration showing a brown-shaded pufferfish without spots. As Bloch's research output was highly influential, it is reasonable to assume that this specific print became the main reference and representation of the species far off its habitat. The Kassel specimen [Fig. 19.9] reflects this iconography shaped by taxidermy and printing. When modelling and colouring this exhibit, the preparator was – being, presumably, far away from the sea – *not* guided solely by the real fish (whose remains they would have in front of them), but by images and descriptions that circulated around collections of European naturalists.

Perhaps the fish lost its individual characteristics, namely the white spots, in transit from ocean to workshop (for example, due to conservation issues), or it was deliberately deprived of them in the picture so as to function as an exemplar organism that needed to reflect the commonly accepted image of the species (shaped by earlier written sources). In either case, whether the spots were lost during the preparation process or were intentionally omitted from the illustrations, it seems evident that Bloch's publication established an iconography of an “un-spotted” white-spotted pufferfish.

73 Looking at other photographs of the species underline this feature even more: Bariche M. – Constantinou C. – Sayar N., “First confirmed record of the white-spotted puffer *Arothron hispidus* (Linnaeus, 1758) in the Mediterranean Sea”, *BioInvasions Records* 7.4 (2018): 433–436, here 434.

74 Rijks, “Fish out of Water” 51.

5 Summary and Conclusion

Keeping in mind the photograph of the living white-spotted pufferfish, *Arothron hispidus*, a conclusion can be drawn about the 18th-century images of “*Tetrodon hispidus*”. The present chapter provided a case study of the species in the context of collecting fish in 18th-century Germany and posed the question of whether and how its (re)presentation, far from the sea, coalesced into a persistent iconography. As illustrated, the process of generating knowledge consists of abstracting and synthesising the defining characteristics that are determined by different media representing the same species and networks of collectors. The specimens attest to the existence of the species as these are (for central Europe) far from home and “exotic” enough that people often did not even know that these animals nor their different subspecies existed. The illustrations, on the other hand, represent a synthesis of the knowledge gained about that species. So, whereas the specimens (sometimes wrongly) attest to the authenticity of the species’ existence, Bloch’s *Naturgeschichte der ausländischen Fische* combines the ichthyological knowledge of previous authors and specimens for other collectors to classify their fishes. Its prints entail the highest degree of information and can be identified as the visual synthesis of contemporary knowledge, but cannot serve the purpose of credible representation alone as they do not depict white spots. It has been shown that the network between collectors allowed for cross-referencing and legitimising knowledge, but that it does not automatically lead to the synthesis of all information. Bloch relied on specimens of the Linck family’s collection for some of his illustrations, but did not consider any of the distinguishing characteristics of their “*Tetrodon hispidus*” exhibit except for the yellow eyes.⁷⁵ This is not surprising since the two specimens in his own collection, the wet and the dry one, resembled each other and also the overall appearance described in previous sources much more closely. Specimens, so it appears, function as models for the printed image only if their appearance matches either other specimens or other sources of knowledge. They, however, can always function as exemplary organisms to legitimise knowledge. In this sense, Johann Heinrich Linck the Younger’s *Index musaei linckiani* listing the exhibit of “*Tetrodon hispidus*” refers

75 The origin of the printed fish’ yellow eyes would need further investigation. They might originate either from a specimen with glass eyes like the Lincks’, or from a pictorial tradition, as other fish species in Bloch’s as well as previous books also have this feature. It might also be an authentic feature of the fish. Bloch’s written description mentions ‘a golden ring’ around the eyes as well. Bloch, *Naturgeschichte der ausländischen Fische* 131.

to the function of this specimen as an exemplar organism, independently of the “accuracy” of its appearance. Interestingly, on the other hand, the print’s function as a reliable identification tool does not work properly; in his working copy of the *Index museai linckiani*, Linck notes that Bloch’s print represents his dry specimen, although, according to today’s knowledge, it shows a different species.

The media of representation – written sources as well as specimens and illustrations – gave a heterogenous image of “the” *Tetrodon hispidus*. These different ideas of the same fish coexisted and, through selection by collectors like Bloch, the different representations merged into popular illustrations which, subsequently, influenced the practice of taxidermy, manifested by the exhibit in Kassel displaying a strong resemblance to the depiction in print. Hence, all media in reciprocity led to a long-lasting depiction of the *Tetrodon hispidus* as an inflated ball-shaped fish with a brownish colour – and without spots. This, however, cannot do justice to the fish as they appear in their natural habitat and, hence, stresses the limitations of conserved specimens as legitimate sources of (the circulation of) knowledge as well as the persistence of falsely legitimised knowledge. Likewise, it also demonstrates the significance of the iconography derived from the print.

To conclude, this paper showcases the processes behind depictions of pufferfish far from the sea and how the abstract knowledge about this species circulated in written and visual sources in two exemplary German collections, consequently merging into an iconography. In a century where a quest for completeness, classification and generalisability prevailed, these pufferfish seem to have proved resistant to these universalising tendencies. The forceful transfer from their natural habitat into human collection systems was accompanied by the permanent loss of crucial information about the “real” fish. Both the knowledge about the inflated abdomen as a reaction to a state of emergency or the fish’s exact appearance including the white spots was not transported with it into its afterlife. As the figures above reveal, the representations were no close match to the living animal’s appearance or indeed its nature.⁷⁶ Despite the complex process of selecting and synthesising existing knowledge, an incomplete iconography of what could be called an “un-spotted” pufferfish manifested itself. On the one hand, due to the distance to the *Tetrodon hispidus*’s place of origin, the fish could not be spotted alive by most European naturalists.

76 As the close examination of the specimens demonstrated, shedding light on these conserved objects previously excluded from the art historical canon offers a base for rich comparisons and inquiries. Thus, this article is also a plea for more interdisciplinary approaches to these nearly forgotten objects.

The long journey to obtain the specimens resulted in significant changes to the animals' appearance. On the other hand, even though white-spotted pufferfish evidently did arrive in European collections, the selection of traits among conflicting sources of knowledge led to the image of an un-spotted brown-shaded *Tetrodon hispidus*. Thus, the circumstances in which the species was received far from the sea resulted in a long-persisting iconography of a 'white-spotted pufferfish without spots'.

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Bibliography

- Bariche M. – Constantinou C. – Sayar N., "First confirmed record of the white-spotted puffer *Arothron hispidus* (Linnaeus, 1758) in the Mediterranean Sea", *BioInvasions Records* 7.4 (2018) 433–436.
- Bauernfeind R., "Jona und der Hai. Zu einem frühneuzeitlichen Hai-Präparat zwischen Exegese und Naturgeschichte", *Zeitschrift für Kunstgeschichte* 82 (2019) 166–178.
- Beyrich H., "Das Linck'sche Naturalien- und Kunstkabinett aus Leipzig, jetzt in Waldenburg (Sachsen)", in Grote A. (ed.), *Macrocosmos in Microcosmo. Die Welt in der Stube. Zur Geschichte des Sammelns 1450–1800* (Wiesbaden: 1994) 581–601.
- Bloch Marcus Elieser, *Naturgeschichte der ausländischen Fische. Mit sechs und dreissig ausgemalten Kupfern nach Originalen. Ersther Theil* (Berlin, Marcus Elieser Bloch: 1785), holding institution: Zentralbibliothek Zürich.

- Bredenkamp H., "Bildwissenschaft", in Pfisterer U. (ed.), *Metzler Lexikon Kunstwissenschaft. Ideen, Methoden, Begriffe* (Stuttgart – Weimar: 2011) 72–75.
- Dreyer N. – Fischer D., "Migration vom Ozean in Wissensordnungen des 18. Jahrhunderts. Ein Kugelfisch-Präparat des Linck'schen Naturalienkabinetts", in Ullrich J. – Middelhoff F. (eds.), *Tierstudien (Tiere und Migration)* 19 (2021) 43–54.
- Egmond F. – Kusakawa S., "Gessner's Fish: Images as Objects", in Leu U. – Opitz P. (eds.), *Conrad Gessner (1516–1565). The Renaissance of Learning* (Berlin – Boston: 2019) 581–606.
- Engelmann W.E. – Sterba G.W.H., "Über einige interessante Objekte in der Fischesammlung des Linck'schen Naturalienkabinetts", *Bulletin of Fish Biology* 16.1/2 (2016) 15–32.
- Froese R. – Pauly D., "*Tetrodon hispidus* Linnaeus, 1758", *World Register of Marine Species* (2022), online, URL <https://www.marinespecies.org/aphia.php?p=taxdetails&id=298330> (07/04/2022).
- Froese R. – Pauly D., "*Triodon macropterus* Lesson, 1831", *World Register of Marine Species* (2022), online, URL <https://www.marinespecies.org/aphia.php?p=taxdetails&id=219917> (07/04/2022).
- Hardy G. – Jing L. – Leis J.L. – Liu M. – Matsuura K. – Shao K., "White-spotted puffer *Arothron hispidus*", *The IUCN Red List of Threatened Species* (2014), online, URL <https://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T193699A2262231.en> (22/03/2022).
- Heesen A. te – Spary E.C., "Sammeln als Wissen", in Heesen A. te – Spary E.C. (eds.), *Sammeln als Wissen. Das Sammeln und seine wissenschaftsgeschichtliche Bedeutung* (Göttingen: 2001) 7–21.
- Kalof L., "History of Animal Iconography", in Roscher M. – Krebber A. – Mizelle B. (ed.), *Handbook of Historical Animal Studies* (Berlin: 2021) 471–492.
- Linck Heinrich, *Rerum naturalium amatoribus et admiratoribus qui huic museo praesentiam commodarunt suam officiosam memoriam spondet musei possessor 10. Henricus Linckius* [Linck family's guest book] (Leipzig, unpublished: 1767–1809), holding institution: Museum Naturalienkabinett Waldenburg.
- Linck Johann Heinrich, *Index museae linckiani, oder kurzes schematisches Verzeichnis der vornehmsten Stücke der Linckischen Naturaliensammlung zu Leipzig. Erster Theil* (Leipzig, Buchhandlung der Gelehrten: 1783), holding institution: Leipzig University Library.
- Nissen C., *Die zoologische Buchillustration. Ihre Bibliographie und Geschichte. Band II* (Stuttgart: 1978).
- Noll T., "Ikonographie/Ikonologie", in Pfisterer U. (ed.), *Metzler Lexikon Kunstwissenschaft. Ideen, Methoden, Begriffe* (Stuttgart – Weimar: 2011) 194–198.
- Paepke H.-J., "M.E. Bloch's frühe aquatische Versuche. Über einen Pionier der Heimtierhaltung", *T.I. Magazin* 28.129 (1996) 33–36.

- Paepke H.-J., *Bloch's Fish Collection in the Museum für Naturkunde der Humboldt-Universität zu Berlin: An Illustrated Catalog and Historical Account* (Rugell: 1999).
- Pietsch T.W., "Charles Plumier (1646–1704) and his drawings of French and American Fishes", *Archives of Natural History* 28.1 (2001) 1–57.
- Rijks M., "Fish out of Water. Collecting Aquatic Animals in the Early Modern Period", in Rijks M. – Smith P.J. – Egmond F. (eds.), *Fish & Fiction. Aquatic Animals between Science and Imagination (1500–1900)* (Leiden: 2020) 48–61.
- Ross A.S., "Recycling Embryos: Old Animal Specimens in New Museums, 1660–1840", *Journal of Social History* 52.4 (2019) 1087–1109.
- Salviani Ippolito, *Aquatilium animalium historiae, liber primus: cum eorumdem formis, aere excusis* (Rome, Ippolito Salviani: 1558), holding institution: Smithsonian Libraries.
- Schlegel H., "Über das Anfertigen von Amphibien- und Fischbildern", in Nissen C. (ed.), *Die zoologische Buchillustration. Ihre Bibliographie und Geschichte. Band II: Geschichte* (Stuttgart: 1978) 250–252.
- Siemer S., "Naturkundliches Sammeln im 18. Jahrhundert. Ein Überblick", in Mieth K.M. – Museum Waldenburg (eds.), *Das Naturalienkabinett. Sammeln, Forschen, Zeigen* (Chemnitz: 2011) 42–54.
- Tripp D. van, "The Murky Waters of Classification. Ordering Fish in Eighteenth-century Europe", in Rijks M. – Smith P.J. – Egmond F. (eds.), *Fish & Fiction. Aquatic Animals between Science and Imagination (1500–1900)* (Leiden: 2020) 76–85.
- Vennen M., *Das Aquarium. Praktiken, Techniken und Medien der Wissensproduktion (1840–1910)* (Göttingen: 2018).
- Wells A., "History of Animal Collections/Animal Taxonomy", in Roscher M. – Krebber A. – Mizelle B. (eds.), *Handbook of Historical Animal Studies* (Oldenbourg: 2021) 603–618.