

Mainstream or Tributary? The Question of ‘Hibernian’ Fishes in William Thompson's *The Natural History of Ireland* (1856)

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The main question and arguments of this essay are encapsulated in its title. It pinpoints the use of appropriate terminology and classification for scientific understanding of a period as integrally part of wider cultural interactions and exchange. For example, the development of geology, hydrogeology and ichthyology as major disciplines and sub-disciplines in nineteenth-century scientific endeavour automatically revised scientific terminologies for river systems. An indicative contemporary definition below thus frames this essay to locate its wider ramifications. In offering the first evaluation of the contributions of William Thompson's *The Natural History of Ireland* (1856) in the history of nineteenth-century ichthyology, this essay therefore also re-evaluates the status of ‘Ireland’ in the history of nineteenth-century natural history. By arguing that both Thompson (1805-1852) and (nineteenth-century) Ireland merit a more centrally contributory rather than auxiliary positioning in the history of scientific endeavour, the essay then challenges the use by historians of allegedly a-temporal river metaphors: they are never culturally or historically neutral. By everywhere putting Thompson's work more centrally on the nineteenth-century scientific map as an importantly comparative case study, the essay can then conclude with the ‘modest proposal’¹ that overtly territorialized, and overly terrestrial conceptions of natural history endeavour lose sight of more significantly fluid, and inter-connective, scientific and cultural understandings of things.

According to Thompson's contemporary, the differently overlooked populariser of science Rosina M. Zornlin:

The main or principal stream is designated the *recipient* stream, because it receives the other streams. [...] Rivers which flow into the recipient, are termed *affluent streams*, because they flow towards, and directly into, the recipient stream. [...] In some instances two rivers unite their streams, and the names of both are lost in a new appellation; thus forming what are termed *confluent* streams.²

Since rivers and their inhabitants follow changing watercourses irrespective of the primary, national or other terrestrial status of these, fish species and their scientific understanding are thus also subject to the shifting and overlapping temporal, as well as geographical and political, definitions and classifications. The comparative contents and

conceptual status of the fifth and final appendix of William Thompson's four-volume *The Natural History of Ireland* (1856) entitled 'Fishes of Lough Neagh and Lake Geneva', to which we will return, neatly illustrates the point. The same 'Hibernian/Irish' Fishes inhabit both these locations making them equally 'Swiss'. In a greater body or structure, however, an appendix is always a subsidiary adjunct: in a publication it is 'an addition subjoined to a document [...], having some contributory value, but not essential to completeness' (OED). In respect to the impacts of Thompson's work, the cartographical specificity of his title has thus clearly created similar 'appendix-effects'. At the time of its publication, the 'single' nation jurisdiction and designation, 'Great Britain and Ireland', made Thompson's field(s) of endeavour geographically, politically and grammatically appositional, with subsequent reception seen as derivative of allegedly more important contributions to knowledge. In the nineteenth-century public mind, 'Ireland' as the smaller adjacent landmass of the British Isles remained at best the lesser, detachable knowledge domain, an adjunct or periphery of the greater Great Britain of England, Scotland and Wales. At worst, Ireland was ever the backward backwater defying civilizing projects, including the scientific. Even when Ireland became an independent nation state and member of the EU almost a century later, there was little concomitant shift in the twentieth-century *critical* mind regarding its independent, or interdependent, knowledge value. Indeed, the importance of Thompson's work has only resurfaced in the last twenty years in reappraisals dedicated specifically to recovering Ireland's heritage as an important, because separate, geographical and cultural entity. A milestone was *Nature in Ireland: A Scientific and Cultural History* in 1997.³ Although no chapter makes Thompson its object, David Cabot calls his *Natural History of Ireland* a 'zoological landmark [...] still used today as a source of reliable information'.⁴ Christopher Moriarty's study, 'Fish and Fisheries', analyses the importance of the latter in the West of Ireland, but does not develop the point that '[w]hile William Andrews studied fisheries, William Thompson was studying the fishes'.⁵ Of the small number of scientific articles specifically addressing aspects of Thompson's work, none exceeds six pages, and most appear in the *Irish Naturalist's Journal*.⁶ Their slightness only adds to perceptions of his rather minor, and localized, historical and scientific significance. The appeal of Thompson's *Natural History*, like the appendix, thus remains circumscribed by niche audiences with research interests in 'Ireland' understood as an outpost geography, a set of sub-regions before/after partition, or as constituting sub-disciplinary knowledge interest, for example 'Irish ornithology'. Ireland's longer or larger cultural and scientific heritages thus remain land-locked as local, antiquarian, folkloric, nationalistic or diasporic concerns, rather than as

nationally or internationally significant. It is a known fact, for example, that Ireland's *flora* and *fauna* today as in the nineteenth century are fewer in number than on the 'greater' British side of the Irish Sea.⁷

The direct result is that William Thompson's substantial contributions to nineteenth-century natural history and, importantly, to its history and legacies have barely figured in modern British, that is mainstream Anglophone history of natural science. David Elliston Allen's eminently comprehensive *Books and Nature* (2010) is illustrative of such bias, and of an unconsciously prejudicial view of 'Irish' contributions. In a chapter highlighting the importance of nineteenth-century publishers of natural history works Allen only mentions Thompson tangentially through his publisher Reeve, despite acknowledging Thompson's reputation as a leader in his field(s):

Reeve had had no better luck in the meantime with another equally worthy undertaking. This was the comprehensive account of the Irish fauna, extending to many octavo volumes, that the leading Belfast naturalist of the day, William Thompson, was to produce. All too soon, however, after only three of the promised volumes had come out, and those covering just the birds (and admirably thoroughly), the author died unexpectedly, in 1852, when still not yet fifty. **Short-changed already by a misleading title** – for where was the botany, let alone the geology, in a work **claimed as** comprising the *Natural history of Ireland?* – the subscribers received **a further, almost insultingly short measure** as a result, and that after a five-year wait: **only a single volume more**, into which **the whole of the rest of the fauna was cursorily crammed**, the best that two of Thompson's friends had been able to do with **merely fragmentary notes of his** to go on.⁸

The emphasis not only illuminates Allen's extraordinary castigation of Thompson for deceptions of every kind, including his failure to complete and deliver his *Natural History of Ireland* from beyond the grave. It also epitomises how critical dismissal of Thompson and of Irish natural history endeavour can elide in a single stroke. The alleged incompleteness of Thompson's work in the 'cursorily crammed' fourth volume excuses examination of their contents (let alone final appendices) as also indicative of the quality of the three finished volumes. Indeed, by over-writing Thompson's achievements and title for 'completeness', Robert Lloyd Praeger's definitive *Natural History of Ireland* of 1950 acknowledged only to dismiss its precursor in the lineage of the history of Irish natural history.⁹ Praeger was the grandson of Robert Lloyd Patterson, Thompson's close friend and main editor, who faithfully brought volume four of the original *Natural History of Ireland* to publication.

Zornlin's definitions above of 'recipient' and 'affluent' river sources however understand parts (tributaries) and wholes (mainstreams) very differently from their assumed

hierarchies of importance. By following her definitional cues, this essay now takes an altogether different course to the work of earlier critics, including those overtly promoting the rediscovery of Thompson. First, its focus on Fishes will demonstrate how the final and complete appendix of *The Natural History of Ireland* is in fact a *summa* of Thompson's foremost knowledge of his subject and its treatment, to better promote Ireland's wider-reaching, trans-locational significance. How then did he contribute directly and fully to the very new discipline of nineteenth-century ichthyology, and hence to the ichthyology of Ireland as constituent of it? Second, how does study of Thompson's work on Fishes remap twenty-first-century terms of engagement with comparative, that is 'confluent', natural science endeavour as a more interestingly complex, and intercultural, phenomenon?

'Fishes of Lough Neagh and Lake Geneva'

Viewed through optics of Zornlin's 'fluvial' terminology, Thompson's final 'appendix' provides a subject-defining supplement that also affluently informs its larger wholes, whether *The Natural History of Ireland's* 200-page section on Fishes, its multi-volume survey, or its geography within a greater Great Britain/Europe. The status and stature of Thompson's contribution on the Fishes could not be clearer in terms of completeness and quality of substance, because these are fully endorsed by the unusual intervention of his Editor in a note qualifying the appendix title:

[It seems to have been Mr Thompson's intention to have investigated the Natural History of Lough Neagh and the Lake of Geneva, both positively and comparatively; but that part of his MSS. **which treats of the fishes, is the only portion which has been left in a state sufficiently far advanced to warrant publication.**—Ed.]¹⁰

The all-important semi-colon here brings together the encyclopaedic wealth of appendix and sectional coverage – number of species, scientific breadth and depth of information gathered for each – as of a whole. If the preceding 200-page survey of the Fishes draws together Thompson's major scientific endeavours investigating marine, estuarine and fresh-water habitats, it also collates and expands Thompson's many expert publications over some twenty years in the newcomer discipline of ichthyology. The final appendix is therefore illustrative of his established authority within this branch of natural history, just as its pithy scope, structure, comparative methodology and *international* specificity encapsulate what he

proposes for his larger *The Natural History of Ireland*. Thompson was acutely aware of the ingrained, and prejudicial, devaluation of Irish subjects – whether people, knowledge, culture or natural history -- and proactively challenged it by setting his project within the foremost agendas of nineteenth-century European continental discovery and debate in natural scientific inquiry. Lough Neagh is not placed first in the title of the final appendix by accident. The largest inland freshwater lake in Ireland *and* the British Isles has in apposition for direct comparison the largest inland freshwater lake in Switzerland and central Europe. Both freshwater bodies formed as part of trans-European river systems that developed at the retreat of the last Ice Age. *Contra* Allen above, geology is therefore everywhere present in Thompson's *Natural History of Ireland* as the underpinning explanation for Ireland's many distinct and distinctive terrestrial, coastal, and fluvial habitats and their many inhabitants. Although fossil species such as the Irish Elk are included in his appraisal of Ireland's former and current *fauna* in volume four, Thompson's primary interest is to map and understand for the first time the richness and diversity of the many different life and living forms that ultimately date back to the geomorphological separation of 'Hibernia' from continental Europe. For Thompson, the many complex niche habitats in which Ireland is particularly rich – its local 'eco-systems' in current parlance – denote at once sub-regional, regional and supra-regional phenomena depending on the optics of vision for the species in question. Through study of the two major inland lakes of Europe that formed at the same period of retreating ice sheets, Thompson can thus draw up three species lists in this appendix, which I have tabulated the better to illustrate his point (see Table A opposite). At the supra-regional level are 'Continental European' freshwater Fishes common to both lakes, although Thompson overtly avoids all use of nationalizing geographical designations. The species found only in one or other of these major inland water bodies then indicate differences in their (local) habitats due to longitude, but also post-glacial *bathymetrical* formation. In AD 563, Lake Geneva suffered a major tsunami (caused by a major rock fall where the Rhône enters its east end) that altered its depth and soil deposits. Since its formation Lough Neagh has remained unusually shallow for such a large water body.¹¹ Thompson's intentions are thus transparent: 'a comparison of the two lakes is very interesting, not only as illustrative of geographical distribution, but of the comparative **value** of their finny inhabitants.'¹² This value is socio-economic (cultural) and scientific. By using the Latin names (and Linnean binomial classification system), Thompson firmly situates his work on Fishes within international rather than national or vernacular communities of natural history knowledge,

Table A

Lough Neagh and Lake Geneva:		
<i>Perca fluviatilis,</i>		<i>Esox Lucius,</i>
<i>Gobio fluviatilis,</i>		<i>Salmo Trutta,</i>
<i>Leuciscus Erythrophthalmus,</i>		<i>Salmo Umbla,</i>
<i>Cobitus barbatula,</i>		<i>Anguilla acutirostris.</i> (8)
Lough Neagh (North)	v	Lake Geneva (South)
<i>Gasterosteus aculeatus</i> + <i>G. pungitius</i>		<i>Cottus gobio</i>
<i>Abramis Brama</i>		<i>Cyprinus carpio,</i> + <i>C. tinca,</i> <i>C. jesses,</i>
<i>Salmo Salar</i> + <i>S. Erios,</i> <i>S. Fario,</i> <i>S. ferox</i>		<i>C. jesses,</i> <i>C. rutilus,</i> <i>C. alburnus,</i>
<i>Coregonus pollan</i>		<i>C. jaculus,</i> <i>C. bipunctatus.</i> <i>C. phoxinus</i>
<i>Anguilla latirostris</i> + <i>A. mediorostris</i>		<i>Coregonus thymallus</i> + <i>C. fera,</i>
<i>Petromyzon marinus</i> + <i>P. fluviatilis,</i>		<i>C. hiernalis</i>
<i>P. Planeri</i>		<i>Lota vulgaris</i> (21)
<i>Ammocætes branchialis</i> (21)		

although the latter are not ignored.¹³ Readers from or outside Ireland are thus assumed to share the author's scientific fluencies (including knowledge of geology), to benefit from Thompson's gloss on this 'data', extrapolated from multiply informed scientific evidence, including his own personal observations. To quote Thompson's final appendix:

Here we find the general result that might be anticipated from the geographical position of the two lakes, the more northern being the richer in species of the genus *Salmo*; the more southern in the species of the *Cyprinidae*; for it is well known that **in continental Europe** the *Salmonidae* increase in number northward, and the *Cyprinidae* southward.

The **value** of the fishes of the northern lake is vastly greater than that of the southern. The most striking difference in connexion with the species which are common to the two lakes is, that *eels*, which are rare in Geneva, are abundant in Lough Neagh.¹⁴

The factual baldness of Thompson's lists in Latin and measured style in this appendix reflect his emphases throughout the *Natural History of Ireland* on exact and exacting scientific information. By promoting and extending knowledge of Ireland's particular rich fish biospheres with the view of facilitating their wider comparative understanding – exemplified here in Lough Neagh and Lake Geneva – Thompson immediately redraws nationally-

bounded designations for such species, and hence their normally assumed hierarchies of value. Lough Neagh's Fishes no longer have secondary positioning within 'Great Britain and Ireland' because they validate geologically similar species in now separate 'Hibernian-British' and 'Swiss' continental habitats. Thompson's recognition of 'common' and 'distinctive' species in Ireland is thus not only for themselves, or to valorise the latter. Rather their scientific interest as noted here is the northerly predominance of the Salmonid Fishes, yet their unusual variations in comparable habitats. We will return below to the 'distinctive' forms of *Coregonus* marked in bold in table A. The 'common' are no less vital markers for species ranges across time, regionally and transregionally, to understand the similarities, differences and changes in expected patterns. In short, Thompson is at the forefront of what we now call biogeographical understanding of habitat populations. *Contra* Allen, we can already see how Thompson's study exhibits an extraordinary completeness, durability and *ecological* value once we firmly recast and understand Ireland's status as avowedly interconnected 'Continental-Hibernian' natural history.

Thompson's *Natural History of Ireland* is thus no travelogue expounding the beauties and curiosities of Ireland, to inform leisured residents or visitors of things to see region by region, accompanied by entertaining anecdotes. Nor is it a manual of specialist advice for hunting, shooting and fishing Ireland's common or rarer species, or collecting them. The extensive ichthyology section of volume four, including the final appendix, firmly locates Thompson's project as a Natural History following, and indeed directly translating, the latest continental models of comprehensive scientific knowledge gathering. Foremost was Cuvier's *Règne animal* [Animal Kingdom] (1817, revised second edition, 1828). Cuvier's foundational work and new approach of comparative anatomy spawned major national investigations and book-length studies of mammals, birds, invertebrates etc. in the 1830s and 1840s. One was his definitive 22-volume *Histoire naturelle des poissons* [The Natural History of Fishes] (1828-1848) co-authored with Achilles Valenciennes (1794-1865), who completed it when Cuvier died in 1832. Although only 200 pages, the Fishes section of volume 4 of Thompson's *Natural History* is a no less massive or ambitious endeavour. Its value and significance, like those of its author, remain hidden in full view if regarded only in regional and/or derivative Anglophone/Anglo-centric contexts. Does reframing Thompson as more than 'the leading *Belfast* naturalist of his day', or as 'the most important naturalist in mid-nineteenth-century *Ireland*'¹⁵ also recast the significance of *The Natural History of Ireland*?

Mr. William Thompson of Belfast/‘M. W. Thompson de Belfast’

The history of nineteenth-century European Ichthyology triggered by the discipline-defining *Histoire naturelle des poissons* by Cuvier and Valenciennes has yet to be written, and in the form of a companion to Cuvier’s extensive survey of all prior knowledge of the field in its first volume (1828). All twenty-two volumes richly attest to the European and international network of expert correspondents including women that Cuvier (and Valenciennes) relied upon and quoted to provide new information and specimens to complete this encyclopaedic account and reclassification of world Fishes. I unpacked Cuvier’s internationally collaborative methods as also the model for understanding such a history of nineteenth-century ichthyology when I mapped one of its (truncated) branches -- the history of ‘British’ fresh-water ichthyology from 1800 to 1870 -- to recuperate and embed the hitherto invisible *Fresh-Water Fishes of Great Britain* (1828-1838) by Sarah Bowdich (1791-1856).¹⁶ In Table B (see opposite) are the major Anglophone contributors to ‘British’ ichthyology I examined in this study, Thompson included, whose publications all failed to acknowledge the work of Sarah Bowdich. By now focusing on Thompson in this roster, ordered by the chronological appearance of key book-length publications, I deploy his ‘Lough Neagh and Lake Geneva’ comparative bio-geographical approach overtly to include French/Francophone texts of this period -- marked in bold -- since French rather than English was the *lingua franca* of nineteenth-century science and hence of ichthyology. William Thompson’s work in this list everywhere appears secondary, derivative and belated, a *regional* newcomer in an already established field. The *Dictionary of Irish Biography* entry for Thompson is again indicative of his tributary position when viewed within Anglophone and Anglosphere contexts:

Thompson became the most important naturalist in mid nineteenth-century Ireland. From **1827 to 1852** he contributed **almost eighty papers on Irish natural history** to the *Magazine of Botany and Zoology* and the *Proceedings of the Zoological Society of London*. From **1836 to 1851** he contributed to *The Magazine of Natural History*. Invited to travel to the Levant and the Aegean Sea in April–July **1841** with Edward Forbes, professor of natural history at the University of Edinburgh, on HMS *Beacon*, Thompson observed twenty-three species of birds on migratory flights, and published ‘Notice of migratory birds’ in *Annals of Natural History*. [...] Thompson published other papers in the same journal during **1841–3**. At a meeting of the British Association in Glasgow in 1840 his ‘Report on the fauna of Ireland – Division Vertebrata’ attracted favourable notice. He presented and published a second and final part enumerating the invertebrates at the Cork meeting [...] in August 1843. The two reports formed the most complete catalogue of Irish fauna yet published. [...] He was president of the Belfast Literary Society (1837–9) and also an enthusiastic patron of the visual arts in the city. [...] Thompson was a corresponding member of natural history societies in Boston and Philadelphia and had many friends; he is known to have assisted

Table B: Contributors to ‘British’ Ichthyology, 1828-1868

Cuvier, Georges & Achilles Valenciennes,	<i>Histoire naturelle des poissons</i> (Paris: F. G. Levrault, 1828-1838)
Bowdich, Sarah:	<i>The Fresh-Water Fishes of Great Britain</i> (London: Ackerman, 1828-1838)
Jardine, William:	<i>Ichthyology: Fishes of the Perch Family</i> , The Naturalist’s Library (Edinburgh: W. H. Lizars, 1835)
Jenyns, Leonard:	<i>Manual of British Vertebrate Animals: or Descriptions of all the Animals belonging to the Classes, MAMMALIA, AVES, REPTILIA, AMPHIBIA, AND PISCES</i> (Cambridge: John Smith, 1835)
Yarrell, William:	<i>A History of British Fishes</i> 2 vols. (London: John van Voorst, 1836)
Vallot, J.-N.:	<i>Ichthyologie française, ou histoire naturelle des poissons d’eau douce de la France</i> (Dijon: Imprimerie E. Frantin, 1837)
Wilson, James:	‘An Introduction to the Natural History of Fishes: being the Article “Ichthyology” from the Seventh edition of the <i>Encyclopaedia Britannica</i> . With above One Hundred and Thirty Illustrations (Edinburgh: Adam & Charles Black; London: Simpkin, Marshall and Co. and others, 1838)
Swainson, William:	<i>On the Natural History and Classification of Fishes, Amphibians and Reptiles</i> , The Cabinet Cyclopaedia, 2 vols. (London: Longman, Orme, Brown, Green and Longmans; John Taylor, vol. 1, 1838, vol. 2, 1839)
Jardine, William:	<i>Illustrations of British Salmonidae</i> , 2 Parts. Printed for the Author (Edinburgh, 1839–41)
Agassiz, Louis:	<i>Histoire naturelle des poissons d’eau douce de l’Europe central</i> (Neuchâtel: H. Nicolet, 1839)
Hamilton, Robert:	<i>Ichthyology: British Fishes</i> . Parts 1 & 2. The Naturalist’s Library (Edinburgh: W. H. Lizars, 1843)
THOMPSON, WILLIAM:	<i>THE NATURAL HISTORY OF IRELAND</i> , VOL. 4 (LONDON: HENRY G. BOHN, 1856)
Pennell, H. Cholmondeley:	<i>The Angler-Naturalist: A Popular History of British Fresh-Water Fish. With a Plain Explanation of the Rudiments of Ichthyology</i> (London: John Van Voorst, 1863)
Couch, Jonathan,	<i>A History of the Fishes of the British Islands</i> 4 vols. (London: Groombridge, 1867-68)

many other researchers in Ireland, Britain and the Continent. One of those who thought highly of his work was Charles Darwin.¹⁷

Within the Francophone comparative contexts that frame all the protagonists/works in Table B, Thompson's much more significant and contributory roles only emerge when we read the same facts of his biography overtly for his many *continental* activities and correspondents, featuring in the *DIB* only as an afterthought. A reason why 1827 and then 1836 were turning points for Thompson's prolific contribution to scientific print was his extensive non-British scientific travelling in 1826 and again 1835. His visit in 1826 to Holland, traveling down the Rhine to Switzerland, on to Rome and Naples before returning to Belfast via Florence, Geneva and Paris was to view more than the art and monuments of European culture. In 1826, the Paris Museum of Natural History [Muséum national d'histoire naturelle] and Jardin des Plantes were the European scientific centres for natural science research, for the collection and classification of new species from voyages of discovery to all regions of the globe, and hence the magnet for European and overseas collaborators and correspondents with the professors at the Paris Museum. Coenraad Jacob Temminck (1778-1858), the foremost Dutch authority on Birds and the first director of Leiden's equivalent institution, was a regular visitor. Because science was not yet 'professionalised', expert overseas amateurs were especially welcomed to the collections and laboratories. If they were also speakers of the vernacular *lingua franca* of culture and science at the time, French, they were often invited to Cuvier's famous Saturday salon. In the Fishes section of the *Natural History of Ireland* Thompson quotes extensively, and without English translation (which still does not exist), from the *Histoire naturelle des poissons*.¹⁸ Its prospectus, which Cuvier published in 1826, was for the most extensive and intensive collaborative project in this field yet to be mounted. Among the major areas of knowledge he identified as hitherto under-researched were fresh-water, and deeper-sea Fishes in every continent, including Europe.

If 'Paris' thus had profound reflective and inter-connective scientific value for Thompson so too had 'Geneva' and 'Switzerland' as the title of his final appendix underscores. Their importance for ichthyology in the 1830s and 1840s lies in the scientific person behind the geographical place, Louis Agassiz (1807-1873). In 1828-29 Agassiz had corresponded with Cuvier concerning Spix's study of Brazilian Fishes in the hope, unfulfilled, of joining Alexander von Humboldt's Asiatic Expedition to work as an expert in this branch of natural science. Agassiz then went to Paris in 1830-1832 to work instead with

Cuvier, until the latter's death cut short Agassiz's opportunities to further develop his expertise in fossil Fishes as well as living species. Humboldt then intervened in Agassiz's mounting financial difficulties in Paris by securing him a Professorship back in Switzerland at Neuchâtel, where he launched his work on the fresh-water Fishes of central Europe, and their connections with glaciation. When the first number of Agassiz's 'Poissons fossiles' [The Fossil Fishes] was published in 1834, Agassiz received his first invitation to England to speak to the London Geological Society, and to receive its Wollaston Medal. The people he would also meet included William Buckland (1784-1856) -- whom Agassiz later invited to Neuchâtel in 1837 -- Sir Roderick Murchison (1792-1871) and Sir William Jardine (1800-1874). The 'continental' gloss on these 'Anglosphere' facts is that Agassiz spoke no English before he emigrated to the US in 1848,¹⁹ so communicated all his scientific papers and corresponded in French. The same situation pertains in 1835, when Agassiz attended the meeting of the British Association for the Advancement of Science in Dublin. There if not already also in London he would have met the renowned collector of fossil Fishes, Lord William Willoughby Cole Third Earl of Enniskillen (1807-1886),²⁰ as well as William Thompson, the respected member of the British Association for the Advancement of Science (BAAS). Because glaciers and fossil Fishes were then central to Agassiz's work from 1835 to 1840, he also went to the Glasgow BAAS meeting in September 1840 as part of a three-month research trip with Murchison to the north of Scotland, as well as to Ireland and northern England, to inspect Great Britain's Old Red Sandstones and their fossil Fishes. The Professor of Natural Philosophy at Edinburgh University James D. Forbes (1809-1868), Sir William Jardine, Lord Cole and William Thompson will all entertain him during this visit, and Agassiz will also have encountered the work if not also the person of William Yarrell (1784-1856), Secretary of the Zoological Society of London, 1836-1838 and expert on British Fishes. The making of the bio-geological and biogeographical sciences of the 'Fishes of Lough Neagh and Lake Geneva' thus interconnect and inter-reflect their major makers in the 1830s and 1840s hidden in full view -- Thompson and Agassiz -- as 'affluent' and 'confluent' authorities and collaborators in the principal or 'recipient' mainstream of the Cuvier-Valenciennes *Histoire naturelle des poissons* (1828-1848). Indeed, Thompson clearly qualifies the nature of his relationship with Agassiz and its longstanding qualities in the *Natural History of Ireland*: 'A great deal might be said on the manifold influences affecting this species [the Char of Ireland], but it is for my friends, the authors of the two great works now in progress -- M. Agassiz, in his Fresh-Water Fishes of Central Europe, and Sir W. Jardine in his Scottish Salmonides -- to descant upon them.'²¹ Does 'European' mainstream

ichthyology then supply the missing evidence for Thompson's full, primary and early involvements in its fields?

Thompson, unlike Agassiz, did not work on fossil Fishes. Like Yarrell, Jenyns, Couch and other specialists in British Ichthyology (see Table B) his interests included marine, estuarine and freshwater species because of Ireland's particularly extensive and geologically distinctive coastlines and inland waterways. Like all his major Anglophone contemporaries and correspondents like Jardine and Jenyns who were expert fishermen, Thompson was additionally among the earliest experts in nineteenth-century ichthyology regularly to employ dredging as new method to reach seabed or shore-based species hitherto not part of commercial or leisure fishing. His first experience of dredging was in 1834 with the Manx-born naturalist, Edward Forbes (1815-1854). Thompson then travelled once more to France, Germany and Switzerland with Forbes in 1835, before joining him again in 1841 to work on explorative dredging in the Mediterranean and in the Aegean for 18 months on the *Beacon*. If Thompson's work on algae and bird migrations are recognised as major scientific contributions of this expedition, its applications to what was pioneering about the work on the Fishes of Ireland has never been noted.²² Its innovation surfaces through piecing together Thompson's articles, their reworking in vol. 4 in *The Natural History of Ireland* and key references to Thompson in various volumes of the Cuvier-Valenciennes *Histoire naturelle des poissons*, which was undertaken in the order of Cuvier's reclassification of Fishes by their major families. By 1839 and volume 13, Valenciennes had finally arrived at the last of the Labroid Fishes, the 'Crenilabri', which are varieties of Wrasse:

Pendant que j'imprimais ces recherches sur le *Labrus ruplestris* de Linné, je reçois par l'obligeance de M. William Thompson, vice-président de la société des sciences naturelles de Belfast, une notice sur les crénilabres d'Irlande¹, extrait de la Magazine de Zoologie et de Botanique No. II. Je trouve dans le travail que l'auteur a fort bien reconnu le *Goldsinny* de Jago dans le *Labrus ruplestris* de Linné, et qu'il en a pris des individus sur les côtes de Bangor tout-à-fait semblables aux nôtres [...].

¹ Contribution towards a Knowledge of the Crenilabri of Ireland, p. 3.²³

[As I was publishing this research on the *Labrus ruplestris* of Linnaeus, Mr William Thompson, the vice-president of the Natural History Society of Belfast, kindly sent me a note on the Crenilabri of Ireland taken from the Magazine of Zoology and Botany No II. I find in the work that the author has clearly recognised Jago's *Goldsinny* in Linnaeus's *Labrus ruplestris*, and that he has caught individuals on the Bangor coast unmistakably like our own.]

Thompson is clearly corresponding with Valenciennes (in French) to share expertise and update him with new knowledge. But Thompson's article, which Valenciennes correctly

quotes as published in the second volume rather than number of *The Magazine of Zoology and Botany* article in 1838, is much more substantial than a ‘note’. It runs to 8 pages, with two important plates at the end of the volume, one in colour (see appendix 1). Valenciennes thus reports, but does not clarify, what is especially significant about Thompson’s work, despite its immeasurable value as comparative evidence of the existence of this particular fish in Ireland. The original title is ‘Contribution towards a knowledge of the Crenilabri (*Cuv.*) of Ireland, including Descriptions of Species apparently new to Science.’ Thompson will have encountered them often in the Mediterranean during his various dredging expeditions, and through reading the work of the Italian ichthyologist and expert on Mediterranean Fishes, Antoine Risso (1777-1845), whom he quotes in the article. What is new for the ichthyology of Ireland, however, is that other varieties of this species had not previously been found there, or found so far north, although Bangor and Strangford offered warmer and more sheltered habitats to Fishes otherwise not found in Ireland’s waters, including the *Crenilabrus Rupestris* or Jago’s Goldsinny mentioned by Valenciennes. The *Crenilabrus Microstoma* – in the colour illustration in Appendix 1 – was however found as Thompson reports ‘on the beach of county Antrim near Cairnlough [*sic*] by [...] Dr J. L. Drummond, when engaged in collecting *Algae*.’²⁴ Carnlough is even further north than Bangor. In such carefully logged and detailed findings and dissemination of his research, Thompson offers here not only the first mapping of the ranges of particular European-Mediterranean Fishes, but also a meticulous record of unexpected *changes* in their ‘natural’ environments. We now know that ‘the Little Ice-Age’ gripping Continental Europe until the 1850s is drawing to its close. Warming waters would encourage more northerly extensions to Fish populations.

The foremost continental significance of ‘M. Thompson de Belfast’ in the *Histoire naturelle des poissons* also extends to ‘common’ freshwater species, such as the Bream, covered by Valenciennes in 1844 in volume 17. In this instance, the reference is second hand, although no less important for that, because through the important work of William Yarrell (1784-1856), Thompson’s longstanding friend who was at his bedside when he took ill and died in London in 1852:

[La Brème de BUGGENHAGEN] doit être peu commune en Angleterre ; car je ne la vois pas figurée que dans le supplément de l’Histoire naturelle des poissons d’Angleterre de M. Yarell [*sic*], p. 39. L’individu lui a été envoyé du comté d’Essex. Cet habile et zélé ichthyologiste nous apprend aussi que M. W. Thompson, de Belfast, à qui l’ichthyologie doit tant de faits importants sur l’histoire des poissons d’Irlande, a aussi rencontré cette brème dans la rivière Logon [*sic*] près de la ville de Belfast. (pp. 56-57).

[Buggenhagen's Bream must be very uncommon in England; for I do not see it illustrated in the supplement to the Natural History of the Fishes of England but M. Yarrell, p. 39. The individual was sent to him from the county of Essex. This skilled and zealous ichthyologist also informs us that Mr Thompson of Belfast, to whom ichthyology owes so many important facts about the history of the fishes of Ireland, has also encountered this bream in the river L[a]gan near the city of Belfast.]

Thompson is therefore the first to record the uncommon fishes of *England* as well as of Ireland – in this case Buggenhagen's Bream in the river Lagan -- that may formerly also have inhabited the larger of the British Isles at the end of the Ice Age. Without thorough expert cross-referencing and cataloguing on Thompson's part, however, disseminated first to Yarrell and other specialists in British ichthyology, Valenciennes could never have recorded the wider significance of this Bream outside its Continental mainland range.

Thompson as we saw with the Goldsinny is therefore a (mainstream) authority among his expert contemporaries without need of intermediaries. A final reference to Thompson in volume 21 of the *Histoire naturelle des poissons* (1848) – in 'ch. viii Des Corégones' [the Coregoni] – fully makes the point and returns us to the species of *Coregonus* found in Lough Neagh and Lake Geneva marked in bold in Table A. 'Le Pollan (*Coregonus* Pollan, Thompson). M. Thompson m'a envoyé de Loug-Neagh [*sic*] en Irlande la Corégone pollan. [...] Les ichtyologistes anglais sont d'accord pour distinguer ce poisson du Gwyniad.' [The Pollan (*Coregonus* Pollan, Thompson). Mr Thompson has send me from Lough Neagh in Ireland the *Coregonus* Pollan [...] English ichthyologists agree in distinguishing this fish from the Gwyniad].²⁵ If the uniqueness of the Pollan for Valenciennes is underscored through its comparison with the (Welsh) Gwyniad, and through the collective authority of *English* ichthyologists, the French text provides irrefutable evidence of how Valenciennes could make his scientific judgement. Thompson had sent a specimen of this 'rare' 'Hibernian' fish to the Paris Museum for Valenciennes' attention, and to enrich its collections. As noted above in the final appendix of *The Natural History of Ireland* Thompson emphasised the much greater richness of the *Salmonidae* in the 'northern lake', that is Lough Neagh, than in Lake Geneva (and central Europe). In other words, Thompson's unsurpassed scientific collection of Salmonid species in Ireland outstrips any comparable European collection. Species common to both 'Lough Neagh' and 'Lake Geneva' include the *Salmo umbla* or Char, now extinct in Ireland, and various species of Trout, of which the famed Irish 'Gillaroo' (Irish for 'red fellow' due to its distinctive colouring) is historically included as a kind of *Salmo trutta*. Its

specific diet of creatures such as snails or crustaceans with shells, which build up in its digestive system, led Albert Günther (1830-1914) in the 1850s to rename it *Salmo stomachicus* for this reason. In 1835, however, Sir William Jardine had already defined its voracious habits with the name *Salmo ferox*, since he had also found the variety in Scotland. In the 1830s, classifications of the *Salmonidae* -- Salmon and Trout -- were the most debated by European ichthyologists, including Agassiz, because he and others were beginning to understand their complex life cycle and that the Parr was the young of the Salmon rather than a separate species.

In the lists in Table A, however, the *Coregoni* or white Fishes of the Salmon family are of even greater importance, precisely because they inhabit glacial meltwaters and cold mountain lakes and hence indicate Europe's shared post-glacial biogeography. Building on Thompson's already published specialist articles, more than 6 pages of volume 4 of *The Natural History of Ireland* are devoted to its *Coregoni*, although *Coregonus Pollan Thompson* is not among the species in the penultimate appendix listing the species that Thompson named. Valenciennes is unequivocal, however, in his reference and use of binomial qualifier, 'Thompson', and that 'English ichthyologists agree in distinguishing this fish from the Gwyniad'. Yarrell and Sarah Bowdich had documented the latter in small lake habitats in N. Wales. Jardine had also taken a particular interest in the *Coregonus* of Scotland, the Vendace (*Coregonus albula*), in Loch Maben and Castle Loch on his own lands in Dumfriesshire as these lakes also formed at the end of the last Ice Age. Valenciennes' final reference to William Thompson in what remained the definitive scientific work on Fishes throughout the nineteenth century thus fully records the continentally important marine and freshwater species of Ireland as centrally part of a now much less rich nineteenth-century European mainland in terms of certain species. The international scientific language of Latin binomial naming and the (French) *Histoire naturelle des poissons* stereophonically endorse Thompson's significant place as a foremost and respected authority in European ichthyology, without need of the particularizing qualifier, 'de Belfast' [from/of Belfast].

Fellow-Citizen Science

In its unprecedented, indeed unsurpassed, subject coverage of the Fishes of Ireland, Thompson's *The Natural History of Ireland* amply provides evidence that answers the rhetorical question heading this essay. The scientific authority of writer and work is

unquestionably international and mainstream, because Thompson's quietly provocative comparative thrust for 'Ireland' in the understanding of its natural history is always as an informatively inter-connective, interdependent, anti-nationalist, endeavour. At the same time, however, the subject coverage of Thompson's work on the Fishes of Ireland would not have been possible without his equally extensive Ireland-wide networks garnering 'local' knowledge. In these Thompson emulates, but also develops, the multi-participant model with lead orchestrator(s) that Cuvier and Valenciennes pioneered in their *Histoire naturelle des poissons*. We saw above how they meticulously checked and documented the names and work of contributor-experts such as Thompson to knowledge of given species. Thompson likewise (and unlike Anglophone contemporaries and friends such as Yarrell) meticulously documents the names and contributions of all who collected and sent him specimens and information from every corner and aquatic habitat of Ireland. If his verification of their findings often included comparative consultation of the work of fellow ichthyologists of renown in Europe and Britain, such as Cuvier and Valenciennes, Yarrell or Jenyns, Thompson drew concertedly on wider expertise representing all classes of knowledgeable amateur. Much more than in any other work in Table B, Thompson's 200-page section on the Fishes of Ireland contains a plethora of references to *fellow* (Irish) experts, including women, cited for the (scientific) reliability and quality of their information, whether regional, habitat-specific, of a species, or thanks to livelihood/occupation. Information on Sticklebacks provides a particularly rich indicative example of Thompson's reliance on his fellow-workers in the field (of ichthyology):

March 20, 1835 -- On examination of a number of 3-spined Sticklebacks from the island of Rathlin (sent by Mrs Gage to Dr. J. D. Marshall, who submitted them to my inspection). I find that in some the lateral plates extend through the entire sides [...] No other difference can be perceived in these specimens, which are all of a small size, from an inch to an inch and a half in length. From between tide-marks in Larne Lough (Mrs Patterson); from oozy and rocky pools over which the tide regularly flows, situated near the edge of Belfast Bay (Richard Lantry, Esq.—W.T.); also from a deep pool in the middle of it (Mr James Nichol); and from the harbour of Donaghadee (Capt. Fayer, R. N.), —I possess examples of the full-armed stickleback of various sizes up to 3 inches.²⁶

If references to 'Dr. (R.) Ball of Youghal' among other well-known Irish experts in ichthyology pepper the 200 pages²⁷, work by a cross-section of Irish society is equally knowledgeable and zealous: for example a 'Mr W. Andrews of Dingle Bay (p. 82); Rev. G. M. Black (p. 91); 'Major Walker of the Lodge, Enniscorthy' (p. 91); Dr. R. J. Burkitt of

Waterford' (p. 91). Moreover, Thompson also references and footnotes the invaluable anonymous expertise of Belfast and Dublin fish-market traders, or Lough and shore fishermen, who brought 'lore' of all kinds to enhance subject-defining details of his study:

In the months of July and August 1850, mackerel were particularly abundant on the North-East coast. [...] On 24th August, 26 boats were employed in fishing between Greypoint and Crawfordsburn (Belfast Bay) [...] One of the fishermen at Newcastle (James Hill) informed me that 4 men in his boat took 100 dozen in 8 hours.²⁸

Thompson is thus a foremost exponent from the 1830s of the collaborative powers of what is currently known as 'citizen science'.²⁹ As illustrated in these cameo reports above, his altogether more inclusive approaches to informed 'non-expert' participants, however, fundamentally challenges modern understandings of what makes citizen science expertise 'scientific', namely that its authority ultimately lies always with the 'professional' and professionalised science. To verify others' work, Thompson set his own eye-witness field knowledge in different sites in Ireland always on a par with those with longstanding, particular, local knowledge that he could not himself otherwise gain, and hence entrusted informants from all echelons and educational backgrounds in Irish society with proven expertise. When a new subject or sub-discipline domain is in its scientific infancy, such as was ichthyology in the 1840s, and if it is to remain 'leading-edge', Thompson's understatedly comparative, multi-field methodologies determine that veritably comprehensive contributions to the sciences of Fishes combine 'local', 'international' and *cross-society* fellow-practitioner zeal and involvements channelled into a larger common purpose: advancement of knowledge. Without Patterson and other close friends dedicated to the same new comparative scientific standards and excitements, Thompson's endeavour -- especially its completion and publication of the fourth volume of his *Natural History of Ireland* -- could never have come to fruition. The 'unfinished' nature of his work, particularly his comprehensive survey and findings on Ireland's aquatic biospheres thanks to the multiple involvements of fellow-citizens *for* science, only the more strikingly challenges current marine and freshwater science to look to how their current work may bring lasting, transnational, benefits to knowledge, and to the future of its making and makers. 'Citizen science', including in Ireland, still means monitoring terrestrial species.

Conclusions:

This essay has everywhere demonstrated that William Thompson's *The Natural History of Ireland* was no belated footnote, or appendix to nineteenth-century scientific knowledge in its period and since. When re-contextualized within its contemporary scientific definitions for large river systems, and the new sciences of their 'finny' inhabitants, the 'Fishes of Ireland' section proves a precedent-setting work for the undertaking of country-specific natural history, both in its depth and comparative breadth of specialist investigation, and in its engagement with and contributions to discipline-defining international scientific frameworks. As the final appendix so amply demonstrated as indicative of the broader rationale for *The Natural History of Ireland* as a whole, Thompson's comparative anatomy of 'Fishes of Lough Neagh and Lake Geneva' highlights and renegotiates the complex *politics*, as well as the *Realpolitik*, of any enduringly important natural history work.³⁰ When such endeavour is determined by overly nationalizing, nationalistic and 'insular' parameters of engagement, it automatically risks losing its many points of comparative interconnection. Similarly, if the many persons behind scientific knowledge-making are elided or ignored in favour of one or two primary agents, authorities, or professional experts, the history of natural history also loses the greater diversity and community of its networks of players, and the future vibrancy of its development. By contrast, Thompson everywhere shows how much greater is the interconnected flow of knowledge when the significant, and distinctive *fauna* of Ireland – common and rare -- inform their larger *European*, including British, geo-biological whole, so that this further showcases the astonishing diversity of current and former species in which Ireland remained surprisingly rich in Thompson's time.

The interdependency of Thompson's expertise – his fluencies in and connections with 'French' and 'British' international natural science, his field-practitioner experience in multiple aquatic habitats in the Mediterranean as well as Ireland – therefore reflect his more open model for Ireland's multiple interdependent positioning with regard to its natural history. Non-migratory and migratory species and their ranges -- birds, algae, terrestrial and aquatic fauna – are affluent and confluent in the longer histories and changing geographies of Great British and Continental European natural history. Today, Thompson's ichthyology for the whole of Ireland thus offers a comparative bio-geography that locates factors such as extension or contraction of species ranges – migrations -- that nuance and recalibrate our understandings of 'Irish', 'British' and 'European' marine and fresh-water habitats shaped by

geological, as well as Anthropocene ‘climate’ change especially since the mid-nineteenth century.

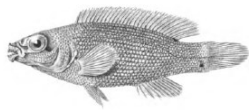
In the ‘Fishes of Ireland’ covered in volume 4 of his *Natural History of Ireland*, Thompson leaves an even more important critical legacy. This is captured in the fluvial contexts in which they were studied, geologically as well as metaphorically. Commentators and historians of science applying insular Anglosphere and Anglophone lenses, and locked into modern-day understanding of science disciplines, inevitably miss, or marginalize Thompson and his work by regionalizing him (merely) as an Irish naturalist. By contrast, this essay has everywhere underscored the polymathic and *bio*-connected nature of Thompson’s work as affluent and confluent with others. Thompson thus reminds all who research on Nature and the Environment in Nineteenth-century Ireland that essentially one needs to know who read, knew and worked with whom, and in several European language contexts. Only *comparative* intellectual and scientific backdrops permit ‘Ireland’ to find the continental resonances of its particularly fluid national and international borders, and to disclose as ‘Hibernian’ certain species and protagonists such as Thompson that remain unprecedented in all other regions of the globe.

If Thompson’s place in international reference works, such as the multiple volume *Histoire naturelle des poissons* of Cuvier and Valenciennes, measure his greater European-Hibernian significance, similar benchmarks can be used to reinvestigate subsequent and modern studies of Irish and British and natural history, including Praeger’s. But Thompson’s innate understanding of the multiple *grounds* for his research surpasses that of even Cuvier and Agassiz. Because Thompson worked intimately with the habitats of his research subjects, particularly on his dredging expeditions, he was particularly sensitive to complex and changing ‘ecospheres’, and to the vital importance of mapping them for their longer economic, cultural and scientific value. His work on Fishes is therefore distinctive, and with hindsight more leading edge than either Agassiz’s – on Fossil Fishes – or the now forgotten laboratory classification monument, the *Histoire naturelle des poissons* because living Fishes integrally map what is often invisible or goes unnoticed in changing terrestrial landscapes. In recuperating Thompson, this essay therefore eschews revisionist reversals of colonial-postcolonial power oppositions to promote a different approach to natural history ‘from below’ that has nothing to do with ‘subalterns’ speaking at last.³¹ Rather, contextually appropriate river definitions offer more connective and useful critical terminologies for rethinking how knowledge of aquatic forms revitalize human terrestrial knowledge. In

addressing ‘the question of “Hibernian” Fishes’ this essay on Thompson’s central contributions to ichthyology, and to Ireland’s central status in nineteenth-century natural history, inspires new ‘fluvial’ impetus for the undertaking of more inter-culturally informed nineteenth-century history and history of science. The ‘modest proposal’ on which it then closes and opens up is this: a stop should be made to using overly territorial, and terrestrial biogeographical narratives and metaphors, such as ‘gaps’ and ‘blank spaces’, in the study of nineteenth-century colonial history and geography of Ireland. Instead, following the multiple cues for what is unequivocally mainstream about Thompson’s work on Ireland -- including his reliance on a plethora of scientific contributor-*contributaries*³² -- it is time instead to plumb the shaping of its more hidden depths, pools, and confluences of intercultural scientific knowledge. ‘Green’ issues are only truly green for Ireland and the wider European Continent when its larger inland waters and fluvial connections to its seas reconnect its geology and natural history with the international (nineteenth-century) poetics of scientific human naming of things.

Appendix 1: 'The Crenilabri of Ireland'

PLATE XIII



Crenilabrus multispinatus.

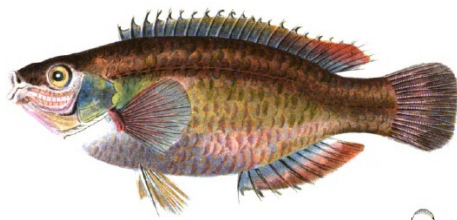
W. Yarwood del.

Zool. & Bot. Mag.

W. Yarwood sculp.

Digitized by Google

PLATE XIV VOL. II.



Crenilabrus microctonus.

W. Yarwood del.

Zool. & Bot. Mag.

Zool. & Bot. Mag.

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¹ The greater significance of Jonathan Swift's much-cited title for the history of natural history will be addressed in the conclusions.

² Rosina M. Zornlin, *The World of Waters; or Recreations in Hydrology* (London: John W. Parker, 1843), p. 228, emphasis in the original. Bernard Lightman has collected Zornlin among important but forgotten popularisers in need of rediscovery. Her uncertain dates in his listing of her in his 'Marketing Knowledge for the General Reader: Victorian Popularizers of Science' *Endeavour* 24:3 (2000), 100-1006 9 (p. 102) perhaps explain why her name is missing from the Oxford *DNB*.

³ J. W. Foster and H. C. Chesney eds., *Nature in Ireland: A Scientific and Cultural History* (Lilliput Press, 1997).

⁴ David Cabot, 'Essential Texts in Irish Natural History' in *ibid.*, pp. 472-496 [p. 491].

⁵ In *ibid.*, pp. 283-298, p. 291. See also John Roney's chapter in this volume.

⁶ See M. W. Rae, 'The Wm Thompson Collection of British Marine Algae', *Irish Naturalist's Journal* 5:4 (1934), 81-83; O. Morton, 'Three Algal Collections in the Ulster Museum Herbarium', *Irish Naturalist's Journal* 20 (1980), 33-37; P. N. W. Jackson, 'William Thompson (1805-1852): Zoologist and Biogeographer', *Irish Naturalist's Journal* 30 (2009), 119-122.

⁷ See Norman Maclean, ed., *Silent Summer: The State of Wildlife in Britain and Ireland* (Cambridge: CUP, 2010). For fishes see Peter S. Maitland and John F. Craig, 'Freshwater Fishes: A Declining Resource', *ibid.*, pp. 383-400. As indicative of more informed general reader publications, see

⁸ David Elliston Allen, *Books and Nature* (London: Harper Collins, 2010), p. 215 emphasis added. It lies outside this essay to map the reactions of Thompson's subscribers and readers of his work in Britain during his lifetime.

⁹ This is a textbook case of Bloomian 'anxiety of influence', but for natural history rather than for poetry. See Harold Bloom, *The Anxiety of Influence a Theory of Poetry* (Oxford: OUP, 1973).

¹⁰ *NHI*, iv, p. 494.

¹¹ See Zornlin's 'picturesque' account of Lough Neagh, further demonstrating prejudicially negative representation of its significance: 'The principal lakes of Ireland are *Lough* or *Lake Neagh*, and the beautiful *Lakes of Killarney*. Lough Neagh is the largest lake in the British Isles, its length being about eighteen miles, and its breadth about eleven or twelve. *This lake is wholly deficient in picturesque beauty, its shores being low and flat, and in some parts marshy, and subject to occasional inundations. Differing thus in character from the beautiful Scotch lakes*, we may expect that it will also differ in the depth of its basin; and accordingly we find, that in no part does the depth of this lake exceed 102 feet.' (1843, p. 288, emphasis added)

¹² *NHI*, iv, p. 494, emphasis added.

¹³ Thompson includes the accepted nomenclatures for Irish fish species used by local experts such as fishermen and fish-mongers as part of the scientific completeness of his survey. See for example *NHI*, iv, pp.201, 'The BRILL OR BRITT[†]' ['†Called 'Britt' in Belfast market'], and p. 203, where the Irish name is the only Anglophone term available, 'THE WHIFF*' ['* Called the "she sole" in Belfast market; "ox sole" also "white sole" in Dublin market.'].

¹⁴ *Ibid.*, p. 495, bold emphasis added.

¹⁵ See respectively Allen, 2010, p. 215, emphasis added, and *The Dictionary of Irish Biography* online at

¹⁶ Mary Orr, 'Fish with a Different Angle': *The Fresh-Water Fishes of Great Britain* by Mrs Sarah Bowdich (1791-1856), *Annals of Science*, 71:2 (2014), 206-240.

¹⁷ Andrew O'Brien and Linde Lunney, 'William Thompson' in *Dictionary of Irish Biography*, Cambridge University Press, <http://dib.cambridge.org/viewReadPage.do?jsessionid=25961W0FF61BO> [last consulted 22/12/2016].

¹⁸ See for example *NHI*, iv, pp. 84, 100, 102, 113. The references to 'Cuv. and Val.' as authority, reference work for comparison and source of agreed nomenclature for the Fish under discussion are too numerous to list here. Thompson also cites in French from Cuvier's second edition of the *Règne animal* (1828), pp. 103, 187, 217, 220.

¹⁹ Jules Marcou, *Life, Letters and Works of Louis Agassiz, with illustrations* vol. 1 (NY and London: Macmillan and Co., 1896): 'The most active part of his life, as regards great discoveries, was spent at Neuchâtel [...] where French was the only language spoken. Before he came to America, all his correspondence with English naturalists was in French.' (p. xiii).

²⁰ See <http://www.biodiversitylibrary.org/bibliography/5557#/summary>.

²¹ *NHI*, iv, p. 167, emphasis added.

²² Robert McAndrew, George Barlee, John Gwyn Jeffries, fellow Irishmen Robert Ball, Edmund Getty, and George Crawford Hyndman.

²³ *HNdesP*, vol. 13 (1839): (Labraoides) Ch. 4 ‘Genres voisins des Crénilabres et en partiulière des Cténolabres’, p. 231.

²⁴ *Mag. Zool and Bot.*, 1838, p. 446.

²⁵ *HNdesP*, vol. 21 (1848), pp. 502-503.

²⁶ *NHI*, iv., p. 83.

²⁷ See for example *NHI*, iv., pp. 70, 74, 82, 91, 92, 93 and ff.

²⁸ *NHI*, iv., p. 91.

²⁹ For its parameters, see Alan Irwin, *Citizen Science: A Study of the People, Expertise, and Sustainable Development* (London & New York: Routledge, 1995). For a recent discussion of citizen science in Ireland, see Alison Donnelly, Olivia Crowe, Eugenie Regan *et al.*, ‘The Role of Citizen Science in Monitoring Biodiversity in Ireland’, *International Journal of Biometeorology* (2014): 58, 1237-1249. Here as in most studies, ‘citizen science’ is a phenomenon is dated to 1900.

³⁰ As indicative of the politics and Realpolitik of citizen science, see Jeffrey P. Cohn, ‘Citizen Science: Can Volunteers Do Real Research?’ *BioScience* (2008): 58:3, pp. 192-197.

³¹ See Gayatri Chakravorty Spivak and Rosalind C. Morris, *Can the Subaltern Speak?: Reflections on the History of an Idea* (New York: Columbia University Press, 2010).

³² I am very grateful to David Brown for flagging in his reading of an earlier version of this essay the importance, and hence re-categorization of Thompson’s co-workers if they were not then to become ‘tributaries’.