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Restoring the Countryside: George Perkins Marsh and the Italian Land Ethic (1861-1882)

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SUMMARY

G.P. Marsh wrote his monumental *Man and Nature* (1864) almost entirely in Italy, where he drew heavily from Italian insights and Italian landscapes. While warning about the human propensity to degrade nature, he also maintained hope in the human ability to restore nature. In Italy, as in the United States, Marsh's writings helped stimulate discussion leading to major new land-use policies; generally preservationist measures in the U.S. and restorationist measures in Italy. The novelty and urgency of Marsh's messages depended upon contrasting Old and New World traditions of land management.

In the mid-nineteenth century, 'Man' and 'Nature' proved very stylish as ways for entitling monographs. In 1853 for example, Friedrich Körner published at Leipzig his *Man and Nature*. Paolo Carucci in Naples produced *The Struggle of Man and Nature*. With slight modification, Guyot, Dawson, and Maury opted for *The Earth and Man*. But Reclus insisted on *The Earth and Men*, while Hellwald avoided the gender issue with *The Earth and its People*. George Perkins Marsh, shying from these complications, finally settled on the more basic *Man and Nature*.¹ Yet Marsh's work was destined to be different. As the only American in the whole group, the 'nature' that he knew and wrote about was distinct from the nature discussed by his European colleagues.

On various diplomatic assignments beginning in the 1850s, Marsh travelled throughout Europe and the Mediterranean, serving as U.S. ambassador to Turkey, and then to Italy. On one return visit to his native New England, he explained to an American audience that 'to our eye, accustomed to the verdant and ever-youthful luxuriance of the primitive forest, the very earth of Europe seems decrepit and hoary'.² His early life in Vermont coupled with his travels in the Old World provided the contrast enabling him to observe, as stated in the

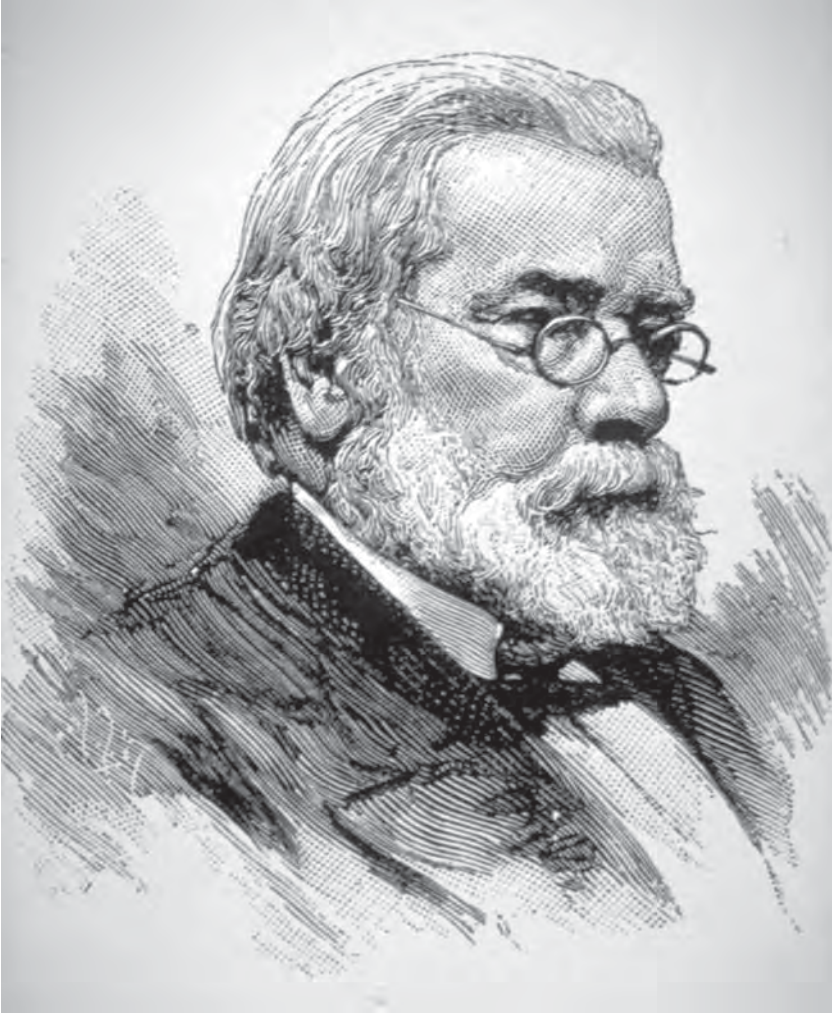


FIGURE 1. G.P. Marsh (University of Vermont)

book's subtitle, that physical geography was indeed modified by human action. His revolutionary message warned that small human effects when combined over time often resulted in profound and dangerous changes to the earth's natural systems. The cutting of forests disturbed streamflow; the cultivating of fields exposed erodible soils. As field fertility drained out, harbours silted up, fish died, villages flooded. Such modifications jeopardised humanity's long-term survival.

But Marsh maintained hope. In the very first sentence of his magnum opus, Marsh clarified that his message included 'the possibility and the importance of

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the restoration of disturbed harmonies ...' The floods and landslides, and soil erosion that resulted from logging or over-grazing, could be prevented by restoring natural conditions. Most forests could be rebuilt, watersheds healed, sand-dunes stabilised. Appropriate techniques combined with conscientious stewardship would allow previous natural abundance and prosperity to rise again. Humans, he believed, can 'become a co-worker with nature in the reconstruction of the damaged fabric which the negligence or the wantonness of former lodgers has rendered untenable'.³

Just as Marsh's European travels convinced him of the destructive human changes in landscapes, his years abroad also allowed him to grasp this hope of environmental restoration. While living in Italy from 1861 for the last twenty-one years of his life, Marsh refined his message about the human ability to restore depleted lands, while communicating this message with greater urgency. Italians and Italian landscapes would be instrumental in helping Marsh to learn about restoration.

MARSH'S OBSERVATIONS IN ITALY

Marsh had toured the Italian peninsula on three separate occasions, years before settling into his U.S. ambassadorship at Turin, Italy's first capital where he wrote most of *Man and Nature*. Describing these travels he emphasised that, unlike England, for example, continental Europe and especially Italy displayed a 'climate, a soil, and a class of industrial pursuits quite different' from those of the American experience. This heightened contrast, Marsh believed, and 'whatever there is of good or bad in all this novelty ... impresses you much more powerfully, and you are more likely to derive instruction from such observation.' Thus, the mountainous lands of northwestern Italy, Marsh explained, unlike their North American counterparts, are often more rugged, while the surrounding plains are more flat. These plains, he continued, lie mostly at sea-level and owe their formation to the erosive forces of 'torrents, which after the Apennines were bared of their forests, gradually washed down the vegetable soil' and accumulated in estuaries. Often, diked riverbeds lay slightly above the surrounding plains, increasing the likelihood of periodic, widespread flooding.

When travelling to the northern alpine regions, Marsh again remarked on the Italian contrasts with American counterparts; he called attention to the instruction offered here, as shown by the clever methods of terracing, transporting soil, or drying hay, for example. But perhaps the most striking feature for Marsh was 'the absence of anything which corresponds with an American's idea of a forest.' The Italian forests were thinner and scarcer, and intensively managed. Indeed, the Italian focus on rejuvenating and restoring the forest also contrasted sharply with the American tradition. He emphasised that, in Italy, much attention is paid 'by governments and individual proprietors, to the renewal and preservation of the forests'.⁴

In 1864, reviews of *Man and Nature* appeared in several American and European periodicals, including Italian. A reviewer for the *Gazzetta Ufficiale*, one of Italy's main newspapers, after reiterating Marsh's warnings about unrestrained resource consumption, agreed that recent destructive flooding in the nearby Alps had been due to deforestation. 'Our wise author', the reviewer explained 'recognises the necessity of large-scale efforts for reversing the disorder caused by earlier generations', and has shown why 'everyone is talking about the need for reforestation'. *L'Indipendenza Italiana* likewise welcomed Marsh's contribution, while commenting that his attention to 'man's reparative actions' composed an important section of the book.⁵ Italians, in the midst of severe depletion of their forests, soils and rivers, well recognised the need for restoration, and for devising effective restorative techniques. In many ways, Marsh had simply reported a message all too obvious to his hosts.

Marsh's move to Italy allowed him to observe Italian land management and to discuss the challenges of restoration with some of the day's leading resource experts. Thus, the ubiquitous agricultural terraces that stepped up and down the peninsula's steep terrain, accumulated by the labour of centuries, enhanced crop production while regulating destructive floods. Sophisticated irrigation methods and canals had long been central to Piedmont and Lombardy, where abundant meltwater flowed from nearby snowy elevations. And the restorative technique called 'colmate', which renewed farmlands by the gradual accumulation of flood detritus in swampy fields, had shown special success in seventeenth-century Tuscany; Marsh applauded this technique, describing it as an 'instance where a soil, which man has once used, abused, exhausted, and at last abandoned, has been restored to his dominion'.⁶

Comfortable with a dozen languages, Marsh read widely about the ideas of land managers from across Europe. Yet he held special praise for Italian contributions. He declared the river engineer Lombardini as 'the highest authority on the subject'; Claudio Calandra's treatise on irrigation law as 'among the most recent and most comprehensive' to be found; and Francesco Mengotti's description of soil stabilisation as the most convincing of its kind.⁷ A thick volume on 'forest archaeology', which appeared a year before *Man and Nature*, may have been one of Marsh's favourites: Alfred Di Berenger, the director of the Vallombrosa forestry school, had written, in Marsh's words, the 'most learned work ever published on the social history of the forest'.⁸ Glancing for a moment through Marsh's recommended reading list, we can begin clarifying the early view of restoration, while discovering how Marsh reached his own conclusions.

Di Berenger, for example, had outlined a basic distinction between so-called 'artificial and natural forests'. In fact, forestry texts throughout the nineteenth century often utilised this two-part distinction, which depended on the human role in forest management. Humans created 'artificial' forests by clearing, seeding and planting; 'natural' forests, on the other hand, grew spontaneously, serving as reserves while allowing for reproduction and growth. Yet human



FIGURE 2 Landscape changes in Grosseto (Tuscany), 300 to 1836. From A. Salvagnoli-Marchetti, *Memorie Economico-Statistiche sulle Maremme Toscane* (Florence: Felice Le Monnier, 1846). This fine print lists the snapshots as dating from 300, 1450, 1500, 1573, and 1836. (University of Vermont)

intervention in the forest could take many forms between these two types of management. Di Berenger thus distinguished ‘artificial rejuvenation’ from ‘natural rejuvenation’ of forests; in the former case, he explained, people planted seeds and seedlings in a forests’ open spaces; in the latter case, people simply dug furrows in clearings for catching forest seeds, or they removed foliage near existing seedlings.⁹ Di Berenger thereby showed that the human role in restoring a forest could span from active to passive. Some types of restoration required more active human roles.

The hydrologist, Mengotti, may provide greater insight into early restorative practices when he describes methods for revegetating barren hillsides. Published in 1816, Mengotti’s best-known work includes a chapter entitled the ‘imitation of nature’ which, in Marsh’s copy of the book, is filled with pencil marks and sidenotes. Here, Mengotti describes how humans can encourage the slow replacement of small plants by shrubs in order to develop a quiltwork of roots and runners that will hold the earth. He then explains that steeper terrain must often be stabilised by rock walls, or check dams, in order to accumulate dirt to form level areas that allow root formation and plant growth; nature will do the rest.¹⁰

Thus Mengotti suggested that imitating nature required attention to both the vegetation and the ground, to both the living and the non-living elements. Techniques were required of both agriculture and engineering. Restoration was therefore more than forestry. Indeed, much of Italy's nineteenth-century struggle to control alpine torrents, by replanting hillsides and building check-dams, included government teams composed of both foresters and engineers.¹¹ These teams had discovered that the attention to connections between multiple natural elements brought better results.

In addition to the terms for restoration used by di Berenger or Mengotti, such as 'artificial forests' or 'imitating nature', another related word pervaded the works cited by Marsh. Across the Italian peninsula, 'bonifica' had become any beneficial project of land management. At least since the seventeenth century, by 'making better', bonifica denoted practices that improved landscapes, whether by increasing agricultural productivity, stabilising erodible hillsides, or draining malaria-prone swamps. Agriculturalists, hydrologists, and foresters highlighted the importance of bonifica (sometimes called buonifica) in their treatises on farming, irrigation, swamp reclamation, and reforestation. The draining of the Pontine marshes near Rome, the building of the Cavour Canal in Piedmont, the planting of black locust in the fallow fields of Lombardy, all represented projects of bonifica.¹² Scientific and agricultural societies, in their journals and their libraries, dedicated great efforts to these various forms of land improvement. Much of Marsh's hope for the human ability to reverse land degradation stemmed from his reading of these treatises on bonifica, and from inspecting the associated management projects.

But 'improvement' (the best translation of bonifica) relied on defining optimal natural conditions for humans, and Marsh remained ambivalent about such improvement schemes. In some cases he applauded human creations, such as pastoral fields or reclaimed swamps; elsewhere he recognised the degradation of soils and streams that resulted from human efforts to refashion nature.¹³ Instead, he put more confidence into restoration, at least in name. 'We have now felled forest enough', Marsh implored, 'let us restore this one element of material life to its normal proportions'.¹⁴ For Marsh, restored landscapes might become as beautiful and productive as they had been in their former, pre-degraded condition.

Indeed, 'restoration', itself, was the other term pervading the literature and vocabulary of land managers. The replacement of previous conditions, the return to an earlier and often romantic natural state, had been the goal of land managers almost as often as bonifica. For example in Turin there appeared an 1833 text on 'theoretical and practical' forestry which explained that good land management sought to 'restore' hardwoods; the author listed the resulting benefits in productivity and stability, for both forests and people.¹⁵ While other land managers preferred the words reforestation, renovation, or restabilisation, vastly different outcomes in the land, however, might result by following one label rather than

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another.¹⁶ But Marsh often chose restoration. His historic view placed the nineteenth-century Italian landscape on a continuum that stretched from the Romans forward. For many lands that he witnessed, he recommended a step back in time to an earlier state: a restoration of disturbed harmonies.

But his writings usually do not reflect the complexity of determining previous conditions, nor of deciding which objects or set of objects should be restored, nor of selecting from the several motives for restoration. One could restore a species, a forest, or a whole watershed. And one could restore these elements in order to prevent flooding and to provide wood for burning, or to enhance aesthetic appeal, or even to create employment and to satisfy political motives. When advocates like Marsh called for the restoration of nature, they opened a new array of difficult, subjective, and sometimes unanswerable questions.¹⁷ Marsh's only certain answer was that restoration had limits. As a goal, restoration provided hope while producing action, but completely restored nature was rarely achieved. Whole regions of the earth, he concluded, 'are now too far deteriorated to be reclaimable by man'. Restoring these lands would require either 'great geological changes, or mysterious influences ... of which we have no present knowledge'.¹⁸

THE ITALIAN RESPONSE TO *MAN AND NATURE*

In a unifying Italy, Marsh followed his diplomatic post from Turin to Florence and to Rome, and he produced in each city a different edition of his master work. In these editions of 1864, 1870 and 1885, respectively, the number of Italian citations multiplied, reflecting his greater awareness of Italian resource issues.¹⁹ His Florence edition, moreover, appeared initially in the Italian translation. As a result, Marsh's synthesis began to reach a receptive Italian public who read his statement about restoration. Just as *Man and Nature* would be widely consulted by American land-use experts, by 1870, so too did Italian land managers and land policy-makers read its pages.

The Florence edition expanded the original by 95 pages, added new notes, and rearranged the presentation of arguments. Marsh especially reworked the key chapters on 'forests' and 'waters', while strategically pushing his comments on restoration to the close of these chapters. Thus, after illustrating destructive human changes in streams or woods, he then offered examples whereby human efforts had partially restored these systems. Importantly, Marsh added a short new preface advising the reader to consult Elisée Reclus' complementary work, *La Terre* (1869). Marsh emphasised that Reclus could offer greater hope with his focus on the 'conservative and restorative, rather than the destructive effects of human industry'.²⁰ In the Florence edition, after several more years of observing and learning in Italy, George Marsh had therefore become an even stronger advocate of restoration.

This new edition relied increasingly on numerous Italian titles that, together, would eventually compose a seventh of his own thirteen-thousand volume library. Thus, he both cites and recommends Siemoni's recent forestry manual, or Pareto's summary on Italian bonifica, or Doni's contribution about the forests' regulation of rivers.²¹ In many respects, Marsh's second edition serves to measure the advances in Italian forest and hydraulic sciences during the late 1860s; his Rome edition, in turn, measures similar advances in the 1870s.

Historian Nelson Gay claimed that Marsh 'understood Italy better than any foreigner of his day.' In fact biographer Lowenthal asserted that the naming of Marsh's Italian acquaintances would 'sound like a role-call of the risorgimento'.²² Many of these personalities shared Marsh's interest in land management. His frequent correspondents and friends such as Luigi Torelli, Quintino Sella, or Bettino Ricasoli, all major figures in Italian politics, had written articles on stream, forest, and farm management.²³ They read his writings with as much interest as he read theirs: when Ricasoli sent Marsh a handful of publications on Tuscany's coastal bonifica, Marsh sent back a copy of his own book.²⁴ Marsh also donated copies to several institutions, such as the Agricultural Academy in Turin; four more copies were purchased for the Italian Alpine Club.²⁵ Within a few years, land experts throughout Italy cited Marsh in their own pages: a partial list would include Siemoni, Bombicci, Calandra, Savastano, and Bandi. As late as 1913, Geologist Michele Gortani still called on Marsh for upholding arguments about the forests' effect on streamflow.²⁶ Many of these experts wrote popular texts, or held prestigious university and government positions. With this wide reading, *Man and Nature* soon began altering Italian land-use policy. A brief foray into the development of Italy's first major forestry law will illustrate Marsh's important role in the enactment of this law. Not surprisingly, restoration lay at the core of this new law.

ITALY'S FOREST LAW OF 1877

After political unification in 1870, Italy faced the unification of its legal system, which included myriads of regional land-use laws, each dictating different ways to govern the forests and the waters.²⁷ The Italian land ethic had long focused on restoration, as reflected by practices for rehabilitating infertile fields or by policies for rejuvenating impoverished forests. But such efforts varied greatly from place to place in the peninsula. The important 1877 forest law became the first major attempt at converting that ethic into national policy. Not only did *l'Uomo e la Natura* help determine the final form of this law, but Marsh found himself in the midst of the debates for its creation.

For example, in some of the first conventions for establishing a national forest law, Professor Balestreri of the renown Georgofili Institute, justified the need for a forestry law by citing Marsh.²⁸ At Rome in the years just before the enactment of the 1877 forest law, Marsh frequently discussed forestry with

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Italian senators; during the parliamentary debates leading to this law, one senator recounted Marsh's dissatisfaction with Italy's slow response to enact a unified forestry law. In fact, Marsh, along with another scientist, Angelo Messadaglia, were the two most often cited experts for supporting proposed clauses in the law.²⁹ Yet, a close reading of Messadaglia's work of 1864 shows that he not only cites and paraphrases a large portion of *Man and Nature*, but he also utilises most of the same references.³⁰ It seems likely, then, that Messadaglia, who was fluent in English, can be considered Marsh's *de facto* translator from 1864 until 1870, when Marsh's Italian edition appeared. Thus, in choosing the most influential person behind Italy's first major legislation on land management, we would settle on Marsh. Unlike another major forest law which he helped inspire, the U.S. Forest Reserve Act of 1891, Marsh lived to see Italy's 1877 law. While the American law was designed primarily to preserve forests, the Italian law was designed to restore them. Maybe Italians read Marsh's book more carefully.

Culminating nearly a decade of parliamentary discussion, the 1877 law focused on several topics of forest management, such as defining the forests subject to regulation, designating user-priority, nominating forest managers, and describing penalties. The most influential clause for policy, though, centred on reforestation. In those barren areas subject to landslides, or floods, or avalanches, the law required conscientious programmes of forest renewal:³¹ if land owners did not themselves begin replanting their denuded lands, then locally organised provincial forest commissions could confiscate this land and replant it for them. Because of the local character of such commissions, the government's purpose was not to expropriate private land, but to insure that it was restored to a former stable and productive condition.³² Restoration, therefore, ranked high in the minds of these early Italian law-makers.

To summarise in epilogue, the results of this first law showed few successes during the next few years. According to contemporary critiques, the 1877 law's primary fault was that it provided almost no mechanism to pay for projects of replanting. Streams still flooded and many hillsides remained as barren and desolate as ever. And so another law, passed in 1888, specifically entitled the 'reforestation law', provided financial contributions from regional and central governments. This last land restoration law, so sophisticated in design and intention, led forest expert Bernard Fernow, to label it as 'one of the best laws of its kind in existence anywhere'.³³ Of places to learn about the ways of restoration, Italy remained at the forefront.

WHY MARSH AND NOT SOMEONE ELSE?

An important question lingers, though, about George Perkins Marsh. If, as I have suggested, Marsh played a key role in sensitising Italian society to the promise of restoration, and much of his own understanding about restoration originated in Italy, why did Italians depend on Marsh to learn about this promise? After all,

Italy's own masters such as Mengotti, or di Berenger, or Calandra, or a host of other experts, had furnished the ingredients for Marsh's writings on restorative land-use.

As one answer, perhaps Marsh had simply read more widely than his Italian colleagues, and had reached a greater synthesis. Or perhaps he used his political position to convince key Italian leaders about the importance of resource restoration, while passing on this message in the most prestigious academies where he was a member, as well as making frequent visits to the forestry school in Vallombrosa, for example, where he donated seeds of a species of California pine, or where he showed the forestry professors recent American forestry articles, and then saw these reprinted in their professional journals.³⁴ Or perhaps Marsh's wide influence stemmed from his expansive personality. I think these are all reasons why Marsh, rather than his Italian colleagues, could best communicate to the Italians themselves the need for restoration. But an even greater explanation lies in his American background.

In correspondence with a close friend, Marsh once professed, 'I have such a passion for the nature of Italy...'³⁵ Yet he also had a passion for the nature of North America. Although he never again returned to the United States during those last twenty-one years, he still collected books about his country, about New England, Yellowstone and the American West. For the U.S. Congress, he prepared his essay about the best ways to implement irrigation in the western arid regions. And after a description in *Man and Nature* of the gorgeous autumn colours of the Alps, he qualified in a later edition that New England's October landscape, however, radiated an even 'softer and more harmonious tone than marks the humble shrubbery' of those alpine hillsides.³⁶ As a product of the American countryside, and as witness in his young adulthood of its transformation by intensive farming and logging, he viewed the Italian countryside from a perspective that Italians could not recognise. He saw everywhere restoration. Land management to Italians meant restorative management to Marsh. He showed that while the New World must seek ways to preserve resources, the Old World must seek ways to restore them. This contrast was the power behind Marsh's thesis. Italians who read Marsh understood that two choices existed for managing lands, but that they could only choose one: restoration.

In reviewing Lowenthal's admirable biography of Marsh, historian Herbert Hill grumbled that 'too much had to be treated too briefly.' And I admit that more could be written about the polymath who wrote an American view of those stylish words, 'Man' and 'Nature.' We may want to look again at the book described as the 'first great work of synthesis' in such fields as geography, anthropology, and ecology; as 'the most remarkable statement of the human impact on nature that was published in the nineteenth century;' and most commonly as, 'the fountainhead of the conservation movement'.³⁷ If *Man and Nature* also be labelled the fountainhead of the restoration movement, then much of its source flowed from Italy.

NOTES

¹ George P. Marsh, *Man and Nature; Or, Physical Geography as Modified by Human Action* (New York: Charles Scribner, 1864; reprint, Cambridge, Mass: Belknap, 1965). Paolo Carucci, *La Lotta dell'uomo colla natura; discorso* (Napoli: 1875). John W. Dawson, *The Story of the Earth and Man* (London: 1873). Arnold H. Guyot, *The Earth and Man* [translated from French] (Boston: 1849). Ferdinand von Hellwald, *Die Erde und ihre Völker*. Louis F.A. Maury, *La terre e l'homme; ou Aperçu historique de géologie, de géographie et d'ethnographie générales* (Paris: 1869). J.J. Elisée Reclus, *Nouvelle géographie universelle; la terre et les hommes* (Paris: 1876-92).

² George P. Marsh, 'The Study of Nature', *The Christian Examiner* v.68 (January-March 1861), 49. Before settling in Italy in 1861, Marsh had traveled through the peninsula three times: 1849, 1853, 1854. See Caroline Crane Marsh, ed., *Life and Letters of George Perkins Marsh* vol. 1 (New York: Charles Scribner's Sons, 1888). Other biographical works on Marsh include George P. Marsh, *Man and Nature; Or, Physical Geography as Modified by Human Action*, (David Lowenthal, ed.; New York: Charles Scribner, 1864; reprint, Cambridge, Mass: Belknap, 1965), introduction; David Lowenthal, *George Perkins Marsh: Versatile Vermonter* (New York: Columbia University Press, 1958); George P. Marsh, *L'Uomo e la Natura; ossia la superficie terrestre modificata per opera dell'uomo*, (Fabienne O. Vallino, ed.; Firenze: Barbèra, 1870; reprint, 1872; reprint Milano: Angeli, 1993), introduction; J. & W. Curtis, *The World of George Perkins Marsh* (Woodstock, Vermont: Countryman Press, 1982).

³ Marsh (1864), preface, 35.

⁴ George P. Marsh, 'Address before the New Hampshire State Agricultural Society, 1865', *Transactions of the New Hampshire State Agricultural Society for the Year 1856*, (Concord: Amos Hadley, 1857), 39,40,42,55,61,71.

⁵ G.F.Baruffi, 'Review of 'Man and Nature'', *Gazzetta Ufficiale*, December 16, 1864; Gerolamo Boccardo, 'Review of 'Man and Nature'', *L'Indipendenza Italiana*, December 19, 1864.

⁶ Marsh (1856), 77. Marsh was referring to Vittorio Fossombroni's project in the Val di Chiana.

⁷ George P. Marsh, 'Inundations and Floods of Rivers', *Johnson's (revised) Universal Cyclopaedia: A Scientific and Popular Treatise* (New York: Johnson & Co., 1887; first edition, 1874-78), 351. George P. Marsh, 'Irrigation: its evils, the remedies, and the compensations', Senate Misc. Doc. n.55 (Feb. 10, 1874), 43rd Congress, 1st Session, 18. George P. Marsh, *L'Uomo e la Natura; ossia la superficie terrestre modificata per opera dell'uomo*, (Fabienne O. Vallino, ed.; Firenze: Barbèra, 1870; reprint, 1872; reprint Milano: Angeli, 1993), 239.

See for example Elia Lombardini, *Intorno al sistema idraulico del Po; ai cangiamenti ed opere pel suo regolamento* (Milano: 1840). Claudio Calandra, *Manuale Idraulico Legale* (Savigliano: Racca e Bressa, 1871). Francesco Mengotti, *Idraulica Fisica e Sperimentale; ossia saggio sull'aque correnti* (Venezia: Andreola, 1816), 2 vol.

⁸ George P. Marsh quoted in H.L. Koopman, ed., *Catalogue of the Library of George Perkins Marsh* (Burlington: University of Vermont, 1892), 237. See Alfred di Bérenger, *Studii di Archeologia Forestale: Dell'Antica Storia e Giurisprudenza Forestale in Italia* (Treviso e Venezia: G. Longo, 1859- 1863).

⁹ di Berenger, 449-50.

¹⁰ Mengotti, 281-310. The copy in the University of Vermont's Special Collections contains Marsh's margin notes.

¹¹ In 1872, the seven-member 'forestry committee' of the Province of Cuneo included both the provincial forestry director and the civil engineering director. See *Annali del Ministero di Agricoltura, Industria e Commercio* v.46 (1872) Parte 1, (Roma: Santa Balbina, 1872), 371.

¹² See for example Piero Bevilaqua and Manlio Rossi-Doria, eds., *Le Bonifiche in Italia dal '700 a Oggi* (Bari: Editori Laterza, 1984); Arrigo Serpieri, *La Bonifica nella storia e nella dottrina* (1948; reprint, Bologna: Edagricole, 1991).

¹³ Marsh (1864), 36-46.

¹⁴ Marsh (1864), 280.

¹⁵ Giuseppe Salvezza, *Cenni Teorico-Pratici sulla Utilità della Coltura Boschiva e sul Sistema Forestale in Piemonte* (Torino: Pomba, 1833), 31- 39.

¹⁶ Some of the recurring Italian labels in the early land management literature include: *restaurare, ripristinare, rinnovare, ristabilire, migliorare, rivestire, assestare, sistemare, correggere, consolidare, bonificare, risarcire, risanare, bonificare, imitare la natura.*

¹⁷ For a discussion of modern ecological restoration see C. Mark Cowell, 'Ecological Restoration and Environmental Ethics', *Environmental Ethics* v.15 (Spring 1993), 19-32.

¹⁸ Marsh (1864), 43.

¹⁹ For a printing history of *Man and Nature*, see Lowenthal (1965), xxvii,xxviii.

²⁰ Marsh (1870), preface.

²¹ Marsh (1870), 241,353,429.

²² H. Nelson Gay, 'Le Relazioni fra l'Italia e gli Stati Uniti, (1847-1871), *Nuova Antologia* v.127 (1907), 670; Lowenthal (1958), 231.

²³ See for example Quintino Sella, 'Atti del settimo congresso degli alpinisti italiani', *Bollettino del Club Alpino*, v.9 (1876), 412-417; Luigi Torelli, *Le Traverse, Briglie o Serre: remedio contro i franamenti* (Venezia: Grimaldo, 1874); Bettino Ricasoli, 'Aspetti della bonifica agraria in Toscana', (Firenze: MCMLVII).

²⁴ Marsh, 'Letter to Ricasoli', November 23, 1861 [#784, Letters from G.P. Marsh, Archive of the Ministry of Foreign Affairs, Rome]; Ricasoli, 'Letter to Marsh', July 24, 1864 [G.P. Marsh Collection, University of Vermont, Burlington].

²⁵ Marsh's autographed copy of *Man and Nature*(1864) is held by the library of the *Accademia di Agricoltura di Torino*. Four copies of *L'Uomo e la natura*(1870) were donated to the Italian Alpine Club by member Budden; in *Bollettino del C.A.I.*(1870), 199.

²⁶ See for example Giovanni Carlo Siemoni, *Manuale Teorico-Pratico d'Arte Forestale*, (Firenze: Barbèra, 1872), 517; Luigi Bombicci, 'Il Diboscamento sulle Montagne: specialmente d'Italia, Polemica (Messina: D'Amico, 1874; estratto dall 'Scienza Contemporanea'), 46; Claudia Calandra, *Sulla Esecuzione della Legge Forestale nella Provincia di Cuneo* (Savigliano: Bressa, 1879), 14; Luigi Savastano, *Il Rimboschimento dello Appennino Meridionale* (Napoli: Giannini, 1893), 142; Virginio Bandi, *Il Problema del Rimboschimento e la Formazione di un Demanio Forestale di Stato* (Ravenna: Ravegnana, 1913), 6; Michele Gortani, 'La Foresta e le Acque', *Giornale di Geologia Pratica* Anno XI, XII (1913, 1914), 179.

²⁷ For a list of pre-unification forestry laws, see Aronne Rabbeno, *Foreste in Italia: Legge Attuali, Testo, Commento, Dottrina e Giurisprudenza* (Torino: Botta, 1877), tavola B, appendice.

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²⁸ Demetrio Balestreri, 'Discorso sopra la coltura dei boschi e sua relazione con la legge forestale', *Atti della Reale Accademia economico agraria del Georgofili* ser.4,v.2(1871), 125-147.

²⁹ Bruno Vecchio, 'La Questione Forestale in Italia nel Secondo '800: Le Cognizioni dei Parlamentari nei Dibattiti sulla Prima Legge Forestale Unitaria (1869-1877)', Relazione presentata al convegno 'La Cultura del Bosco' (Caronia, ottobre 1987), 35, 1-47.

³⁰ Angelo Messedaglia, 'Analisi dell'opera Le inondazioni in Francia dal VI secolo fino ai giorni nostri di Maurizio Champion e Considerazioni generali sulle avvertenze da aversi nella stima degli effetti meteorici ed idraulici delle foreste e del diboscamento: Memoria', *Memorie dell'agricoltura commercio ed arti di Verona* v.43 (1864), (reprint, Verona: Vicentini e Franchini, 1865), 108p. G.P. Marsh is cited on page 70; University of Vermont copy includes the inscription: 'A Mr. G.P. Marsh ... omaggio dell'autore'.

³¹ A copy of this law can be found in *Annuario Scientifico-Forestale per l'Anno 1878* (Pesaro: Federici, 1877), 324-337. See also Romualdo Trifone, *Storia del Diritto Forestale in Italia* (Firenze: Coppini, 1957), 170-174.

³² Similar reforestation laws in nearby France gave special authority to the central government (not local consortiums) for dictating alpine land- use. The imperialistic motives for these laws are discussed in Tami Whited, 'The Struggle for the Forest in the French Alps and Pyrenees, 1860-1949', Ph.D. Dissertation, University of California-Berkeley, 1994.

³³ Bernard Fernow, *A Brief History of Forestry* (1913).

³⁴ Certificates held at the Marsh Collection, University of Vermont, attest to Marsh's membership in the Accademia dei Lincei (1874), Accademia della Valle Tiberina Toscana (1870). He was also member of the Società Geografica Italiana (1870). See the footnote explaining that Marsh donated seeds of *Pinus monophylla* to the Vallombrosa Forestry school, in the *Nuova Rivista Forestale* anno II (1879), p.219. See also the note showing Marsh's responsibility for the appearance of a translated American article entitled, 'Le Piantagioni nella Prateria Occidentale degli Stati Uniti', in the *Nuova Rivista Forestale* Anno III - Dispensa IV (1878), 163.

³⁵ Marsh quoted in Lowenthal (1958), 244.

³⁶ Marsh's library includes works by George Catlin, Ferdinand Haydn, and Clarence King, for example, all published during Marsh's Italian years; See Marsh's, *Irrigation: Its Evils, the Remedies, and the Compensations* (1874); For Marsh's descriptions of the New England autumn see Marsh (1864), page 267, and Marsh (1870), page 348.

³⁷ Herbert W. Hill, 'Review of Lowenthal's 'Versatile Vermonter'', *American Historical Review* v.64 (July, 1959), 1019; Michael Lacey, 'Man, Nature, and the Ecological Perspective', *American Studies* v.8 n.1-3 (Spring, 1970), 15; David Lowenthal, 'George Perkins Marsh on the Nature and Purpose of Geography', *The Geographical Journal* v.126 (1960), 413; Daniel W. Gade, 'The Growing Recognition of George Perkins Marsh', *The Geographical Review* v.73 n.3 (1983), 341; Lewis Mumford, *The Brown Decades* (New York: Harcourt Brace, 1931), 72.