

Supplementary Materials

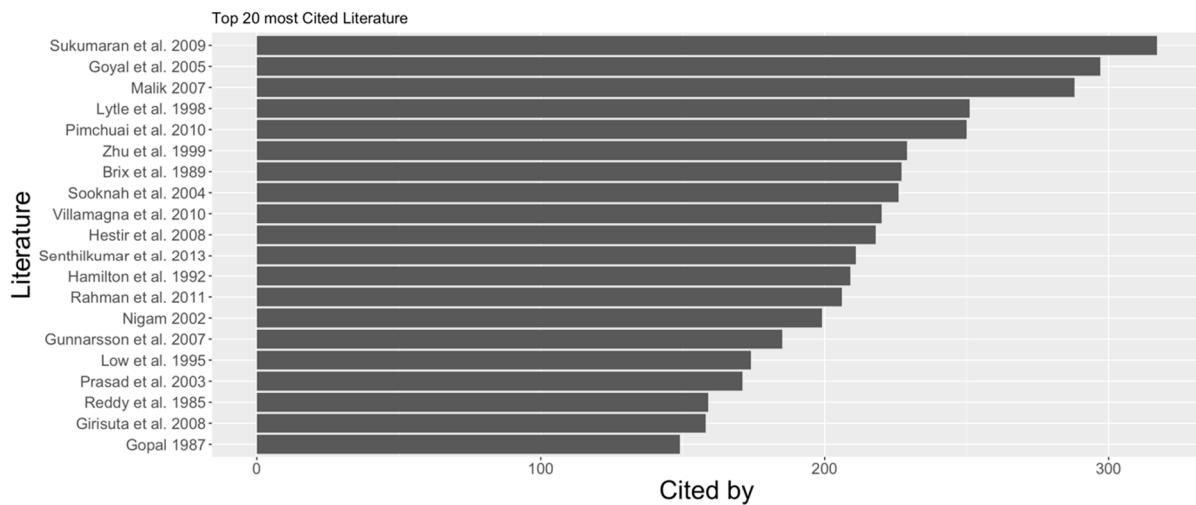


Figure S1. Top 10 most cited literature.

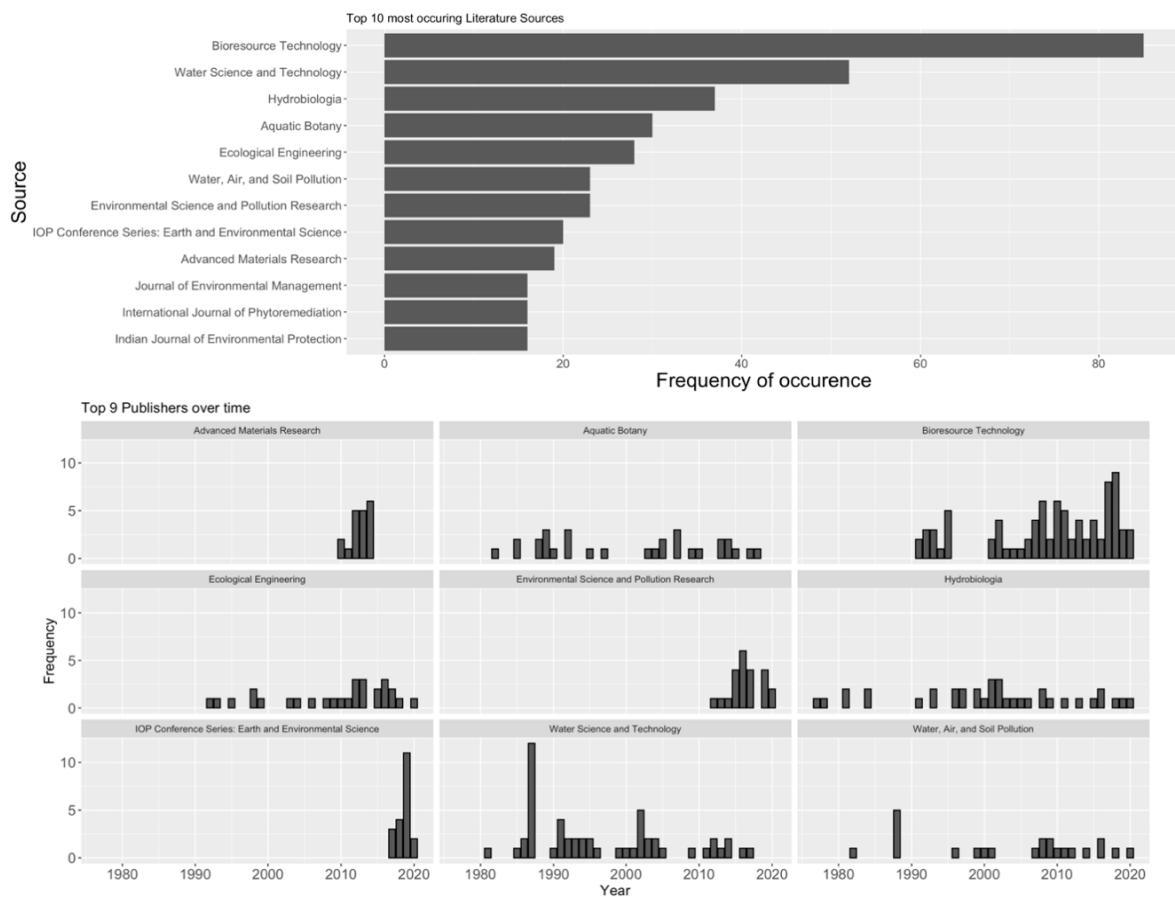


Figure S2. Top 10 most occurring literature sources & top 9 publisher publishing pattern over time.

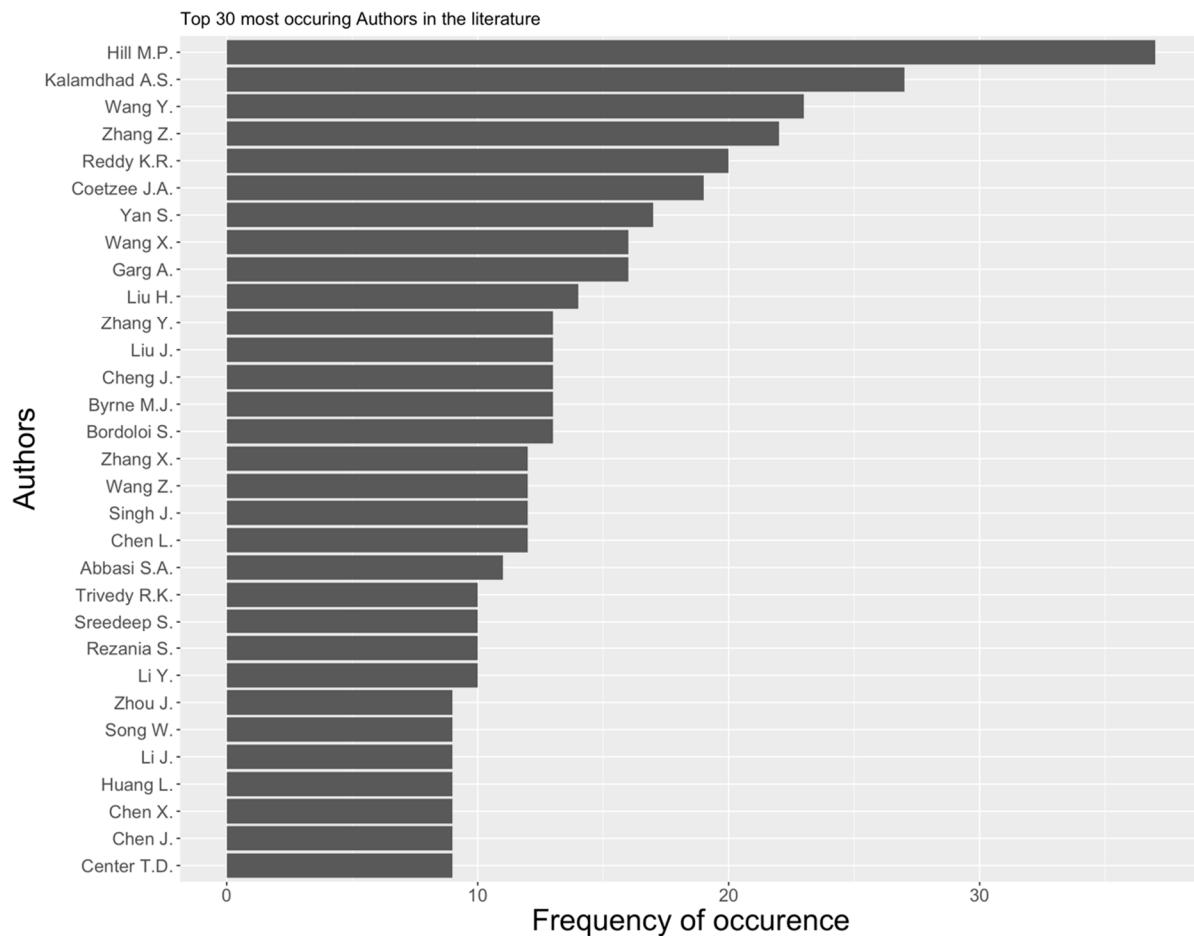


Figure S3. Top 30 most occurring authors in literature.

Table S1. Top 10 cited documents of the pioneering period (1977–2000).

Article	Title	Citation
Lytle et al., 1998 [1]	Reduction of Cr(VI) to Cr(III) by wetland plants: Potential for in situ heavy metal detoxification	251
Zhu et al., 1999 [2]	Phytoaccumulation of trace elements by wetland plants: II. Water hyacinth	229
Brix et al., 1989 [3]	The use of aquatic macrophytes in water-pollution control	227
Hamilton et al., 1992 [4]	Energy sources for aquatic animals in the Orinoco River floodplain: evidence from stable isotopes	209
Low et al., 1995 [5]	Biosorption of basic dyes by water hyacinth roots	174
Reddy et al., 1985 [6]	Nutrient removal potential of selected aquatic macrophytes	159
Gopal. 1987 [7]	Water hyacinth.	149
Muramoto et al., 1983 [8]	Removal of some heavy metals from polluted water by water hyacinth (<i>Eichhornia crassipes</i>)	135
Delgado et al., 1993 [9]	Uptake of Zn, Cr and Cd by water hyacinths	105
Vesk et al., 1999 [10]	Metal localization in water hyacinth roots from an urban wetland	97

Table S2. Top 10 cited documents of the growth period (2001–2014).

Article	Title	Citation
Sukumaran et al., 2009 [11]	Cellulase production using biomass feed stock and its application in lignocellulose saccharification for bio-ethanol production	317
Goyal et al., 2005 [12]	Chemical and biological changes during composting of different organic wastes and assessment of compost maturity	297
Malik. 2007 [13]	Environmental challenge vis a vis opportunity: The case of water hyacinth	288
Pimchuai et al., 2010 [14]	Torrefaction of agriculture residue to enhance combustible properties	250
Sooknah et al., 2004 [15]	Nutrient removal by floating aquatic macrophytes cultured in anaerobically digested flushed dairy manure wastewater	226
Villamagna et al., 2010 [16]	Ecological and socio-economic impacts of invasive water hyacinth (<i>Eichhornia crassipes</i>): A review	220
Hestir et al., 2008 [17]	Identification of invasive vegetation using hyperspectral remote sensing in the California Delta ecosystem	218
Senthilkumar et al., 2013 [18]	Electric double layer capacitor and its improved specific capacitance using redox additive electrolyte	211
Rahman et al., 2011 [19]	Aquatic arsenic: Phytoremediation using floating macrophytes	206
Nigam. 2002 [20]	Bioconversion of water-hyacinth (<i>Eichhornia crassipes</i>) hemicellulose acid hydrolysate to motor fuel ethanol by xylose-fermenting yeast	199

Table S3. Top 10 cited documents of the growth period (2015–2020).

Article	Title	Citation
Zhang et al., 2015 [21]	Efficiency and mechanisms of Cd removal from aqueous solution by biochar derived from water hyacinth (<i>Eichornia crassipes</i>)	116
Rezania et al., 2015 [22]	Perspectives of phytoremediation using water hyacinth for removal of heavy metals, organic and inorganic pollutants in wastewater	96
Yin et al., 2016 [23]	Varying effect of biochar on Cd, Pb and As mobility in a multi-metal contaminated paddy soil	88
Guerrero-Coronilla et al., 2015 [24]	Kinetic, isotherm and thermodynamic studies of amaranth dye biosorption from aqueous solution onto water hyacinth leaves	70
Sadeek et al., 2015 [25]	Metal adsorption by agricultural biosorbents: Adsorption isotherm, kinetic and biosorbents chemical structures	69
Uday et al., 2016 [26]	Classification, mode of action and production strategy of xylanase and its application for biofuel production from water hyacinth	66
Huang et al., 2016 [27]	Thermodynamics and kinetics parameters of co-combustion between sewage sludge and water hyacinth in CO ₂ /O ₂ atmosphere as biomass to solid biofuel	60

El-Zawahry et al., 2016 [28]	Equilibrium and kinetic models on the adsorption of Reactive Black 5 from aqueous solution using Eichhornia crassipes/chitosan composite	59
Lin et al., 2015 [29]	Characterisation of water hyacinth with microwave-heated alkali pretreatment for enhanced enzymatic digestibility and hydrogen/methane fermentation	59
Singh et al., 2015 [30]	Catalytic hydrothermal liquefaction of water hyacinth	59
Rezania et al., 2015 [31]	The diverse applications of water hyacinth with main focus on sustainable energy and production for new era: An overview	58
Sanmuga et al., 2017 [32]	Water hyacinth (Eichhornia crassipes) – An efficient and economic adsorbent for textile effluent treatment – A review	55
Zhang et al., 2016 [33]	Efficient arsenate removal by magnetite-modified water hyacinth biochar	55

Reference

1. Lytle CM, Lytle PW, Yang N, Qian JH, Hansen D, Zayed A, et al. Reduction of Cr(VI) to Cr(III) by wetland plants: Potential for in situ heavy metal detoxification. *Environ Sci Technol* 1998;32:3087–93. <https://doi.org/10.1021/es980089x>.
2. Zhu YL, Zayed AM, Qian J, Souza M, Terry N. Phytoaccumulation of Trace Elements by Wetland Plants: II. Water Hyacinth. *J Environ Qual* 1999;28:339–44. <https://doi.org/10.2134/jeq1999.00472425002800010042x>.
3. Brix H, Schierup H-H. The use of aquatic macrophytes in water-pollution control. *Ambio* 1989;28:100–7.
4. Hamilton SK, Lewis WM, Sippel SJ. Energy sources for aquatic animals in the Orinoco River floodplain: evidence from stable isotopes. *Oecologia* 1992;89:324–30. <https://doi.org/10.1007/BF00317409>.
5. Low KS, Lee CK, Tan KK. Biosorption of basic dyes by water hyacinth roots. *Bioresour Technol* 1995;52:79–83. [https://doi.org/10.1016/0960-8524\(95\)00007-2](https://doi.org/10.1016/0960-8524(95)00007-2).
6. Reddy KR, De Busk WF. Nutrient Removal Potential of Selected Aquatic Macrophytes. *J Environ Qual* 1985;14:459–62. <https://doi.org/10.2134/jeq1985.00472425001400040001x>.
7. Gopal B. *Water Hyacinth*. Elsevier, Amsterdam 1987:477p.
8. Muramoto S, Oki Y. Removal of some heavy metals from polluted water by water hyacinth (Eichhornia crassipes). *Bull Environ Contam Toxicol* 1983;30:170–7. <https://doi.org/10.1007/BF01610117>.
9. Delgado M, Bigeriego M, Guardiola E. Uptake of Zn, Cr and Cd by water hyacinths. *Water Res* 1993;27:269–72. [https://doi.org/10.1016/0043-1354\(93\)90085-V](https://doi.org/10.1016/0043-1354(93)90085-V).
10. Vesk PA, Nockolds CE, Allaway WG. Metal localization in water hyacinth roots from an urban wetland. *Plant, Cell Environ* 1999;22:149–58. <https://doi.org/10.1046/j.1365-3040.1999.00388.x>.
11. Sukumaran RK, Singhania RR, Mathew GM, Pandey A. Cellulase production using biomass feed stock and its application in lignocellulose saccharification for bio-ethanol production. *Renew Energy* 2009;34:421–4. <https://doi.org/10.1016/j.renene.2008.05.008>.
12. GOYAL S, DHULL S, KAPOOR K. Chemical and biological changes during composting of different organic wastes and assessment of compost maturity. *Bioresour Technol* 2005;96:1584–91. <https://doi.org/10.1016/j.biortech.2004.12.012>.
13. Malik A. Environmental challenge vis a vis opportunity: The case of water hyacinth. *Environ Int* 2007;33:122–38. <https://doi.org/10.1016/j.envint.2006.08.004>.
14. Pimchuai A, Dutta A, Basu P. Torrefaction of agriculture residue to enhance combustible properties. *Energy and Fuels*, vol. 24, American Chemical Society; 2010, p. 4638–45. <https://doi.org/10.1021/ef901168f>.
15. Sooknah RD, Wilkie AC. Nutrient removal by floating aquatic macrophytes cultured in anaerobically digested flushed dairy manure wastewater. *Ecol Eng* 2004;22:27–42. <https://doi.org/10.1016/j.ecoleng.2004.01.004>.
16. Villamagna AM, Murphy BR. Ecological and socio-economic impacts of invasive water hyacinth (Eichhornia crassipes): A review. *Freshw Biol* 2010;55:282–98. <https://doi.org/10.1111/j.1365-2427.2009.02294.x>.
17. Hestir EL, Khanna S, Andrew ME, Santos MJ, Viers JH, Greenberg JA, et al. Identification of invasive vegetation using hyperspectral remote sensing in the California Delta ecosystem. *Remote Sens Environ* 2008;112:4034–47. <https://doi.org/10.1016/j.rse.2008.01.022>.

18. Senthilkumar ST, Selvan RK, Lee YS, Melo JS. Electric double layer capacitor and its improved specific capacitance using redox additive electrolyte. *J Mater Chem A* 2013;1:1086–95. <https://doi.org/10.1039/c2ta00210h>.
19. Rahman MA, Hasegawa H. Aquatic arsenic: Phytoremediation using floating macrophytes. *Chemosphere* 2011;83:633–46. <https://doi.org/10.1016/j.chemosphere.2011.02.045>.
20. Nigam JN. Bioconversion of water-hyacinth (*Eichhornia crassipes*) hemicellulose acid hydrolysate to motor fuel ethanol by xylose-fermenting yeast. *J Biotechnol* 2002;97:107–16. [https://doi.org/10.1016/S0168-1656\(02\)00013-5](https://doi.org/10.1016/S0168-1656(02)00013-5).
21. Zhang F, Wang X, Yin D, Peng B, Tan C, Liu Y, et al. Efficiency and mechanisms of Cd removal from aqueous solution by biochar derived from water hyacinth (*Eichornia crassipes*). *J Environ Manage* 2015;153:68–73. <https://doi.org/10.1016/j.jenvman.2015.01.043>.
22. Rezania S, Ponraj M, Talaiekhozani A, Mohamad SE, Md Din MF, Taib SM, et al. Perspectives of phytoremediation using water hyacinth for removal of heavy metals, organic and inorganic pollutants in wastewater. *J Environ Manage* 2015;163:125–33. <https://doi.org/10.1016/j.jenvman.2015.08.018>.
23. Yin D, Wang X, Chen C, Peng B, Tan C, Li H. Varying effect of biochar on Cd, Pb and As mobility in a multi-metal contaminated paddy soil. *Chemosphere* 2016;152:196–206. <https://doi.org/10.1016/j.chemosphere.2016.01.044>.
24. Guerrero-Coronilla I, Morales-Barrera L, Cristiani-Urbina E. Kinetic, isotherm and thermodynamic studies of amaranth dye biosorption from aqueous solution onto water hyacinth leaves. *J Environ Manage* 2015;152:99–108. <https://doi.org/10.1016/j.jenvman.2015.01.026>.
25. Sadeek SA, Negm NA, Hefni HHH, Abdel Wahab MM. Metal adsorption by agricultural biosorbents: Adsorption isotherm, kinetic and biosorbents chemical structures. *Int J Biol Macromol* 2015;81:400–9. <https://doi.org/10.1016/j.ijbiomac.2015.08.031>.
26. Uday USP, Choudhury P, Bandyopadhyay TK, Bhunia B. Classification, mode of action and production strategy of xylanase and its application for biofuel production from water hyacinth. *Int J Biol Macromol* 2016;82:1041–54. <https://doi.org/10.1016/j.ijbiomac.2015.10.086>.
27. Huang L, Liu J, He Y, Sun S, Chen J, Sun J, et al. Thermodynamics and kinetics parameters of co-combustion between sewage sludge and water hyacinth in CO₂/O₂ atmosphere as biomass to solid biofuel. *Bioresour Technol* 2016;218:631–42. <https://doi.org/10.1016/j.biortech.2016.06.133>.
28. El-Zawahry MM, Abdelghaffar F, Abdelghaffar RA, Hassabo AG. Equilibrium and kinetic models on the adsorption of Reactive Black 5 from aqueous solution using *Eichhornia crassipes*/chitosan composite. *Carbohydr Polym* 2016;136:507–15. <https://doi.org/10.1016/j.carbpol.2015.09.071>.
29. Lin R, Cheng J, Song W, Ding L, Xie B, Zhou J, et al. Characterisation of water hyacinth with microwave-heated alkali pretreatment for enhanced enzymatic digestibility and hydrogen/methane fermentation. *Bioresour Technol* 2015;182:1–7. <https://doi.org/10.1016/j.biortech.2015.01.105>.
30. Singh R, Balagurumurthy B, Prakash A, Bhaskar T. Catalytic hydrothermal liquefaction of water hyacinth. *Bioresour Technol* 2015;178:157–65. <https://doi.org/10.1016/j.biortech.2014.08.119>.
31. Rezania S, Ponraj M, Din MFM, Songip AR, Sairan FM, Chelliapan S. The diverse applications of water hyacinth with main focus on sustainable energy and production for new era: An overview. *Renew Sustain Energy Rev* 2015;41:943–54. <https://doi.org/10.1016/j.rser.2014.09.006>.
32. Sanmuga Priya E, Senthamil Selvan P. Water hyacinth (*Eichhornia crassipes*) – An efficient and economic adsorbent for textile effluent treatment – A review. *Arab J Chem* 2017;10:S3548–58. <https://doi.org/10.1016/j.arabjc.2014.03.002>.
33. Zhang F, Wang X, Xionghui J, Ma L. Efficient arsenate removal by magnetite-modified water hyacinth biochar. *Environ Pollut* 2016;216:575–83. <https://doi.org/10.1016/j.envpol.2016.06.013>.