

Appendix C

Papers excluded at full text.

1. Papers excluded due to covering the impact of liming on the physiology of organisms rather than impact on the abundance or diversity.

Andersen, R., O. Haraldstad, et al. (1987). "Effects of Shellsand on Water Quality and Mature Brown Trout (Effekt av skjellsand på vannkvalitet og kjønnsmoden aure)." *Fauna FUNAAO* 40(4): 150-159.

Galina, M. S. (1997). "The difference in brown trout (*Salmo trutta* L) blood composition from acidic and limed sites of two rivers in western Norway." *Water Air and Soil Pollution* 96(1-4): 203-210.

Gunn, J. M. and W. Keller (1984). "In Situ Manipulation of Water Chemistry Using Crushed Limestone and Observed Effects on Fish." *Fisheries* 9(1): 19-24.

Jago, C. H. and T. A. Haines (1990). "Morphometric Effects of Low pH and Limed Water on the Gills of Atlantic Salmon (*Salmo salar*)." *Canadian Journal of Fisheries and Aquatic Sciences* CJFSDX 47(12): 2451-2460.

Janicki, A. and H. S. Greening (1988). "The effects of stream liming on water chemistry and anadromous yellow perch spawning success in two Maryland coastal plain streams." *Water, Air, & Soil Pollution* 41(1): 359-383.

Kroglund, F. and M. Staurnes (1999). "Water quality requirements of smolting Atlantic salmon (*Salmo salar*) in limed acid rivers." *Canadian Journal of Fisheries and Aquatic Sciences* 56(11): 2078-2086.

Kroglund, F., H. C. Teien, et al. (2001). "Time and Ph-Dependent Detoxification of Aluminum in Mixing Zones between Acid and Non-Acid Rivers." *Water, Air, & Soil Pollution* 130(1-4): 905-910.

Kroglund, F., H. C. Teien, et al. (2001). "Water Quality Dependent Recovery from Aluminum Stress in Atlantic Salmon Smolt." *Water, Air, & Soil Pollution* 130(1-4): 911-916.

Lacroix, G. L., D. J. Gordon, et al. (1985). "Effects of Low Environmental pH on the Survival, Growth and Ionic Composition of Postemergent Atlantic Salmon (*Salmo salar*)." *Canadian Journal of Fisheries and Aquatic Sciences* 42(4): 768-775.

Majewski, H. S., S. B. Brown, et al. (1990). "Responses of kidney, liver, muscle, and bone in Atlantic salmon (*Salmo salar*) to diet and liming in acidic Nova Scotia rivers." *Canadian Journal of Fisheries and Aquatic Sciences* 47(12): 2441-2450.

McCahon, C. P., A. F. Brown, et al. (1989). "Effects of acid, aluminium and lime additions on fish and invertebrates in a chronically acidic Welsh stream." *Water, Air, & Soil Pollution* 45(3): 345-359.

McCahon, C. P. and M. J. Poulton (1991). "Lethal and sub-lethal effects of acid, aluminium and lime on *Gammarus pulex* during repeated simulated episodes in a Welsh stream." *Freshwater Biology* 25(1): 169-178.

Merrett, W. J., G. P. Rutt, et al. (1991). "The response of macroinvertebrates to low pH and increased aluminium concentrations in Welsh streams: multiple episodes and chronic exposures." *Archiv fuer Hydrobiologie* 121(1): 115-125.

Miller, J. D., H. A. Anderson, et al. (1995). "The consequences of liming a highly acidified catchment in central Scotland." *Water Air and Soil Pollution* 85(2): 1015-1020.

Morgan, E. L., K. W. Eagleson, et al. (1984). "Linking Automated Biomonitoring to Remote Computer Platforms with Satellite Data Retrieval in Acidified Streams." *Impact of Acid Rain and Deposition on Aquatic Biological Systems. A Symposium Sponsored by the American Society for Testing Material Committee D(928):* 84-91.

- Muniz, I. P., R. Andersen, et al. (1987). "Physiological Response of Brown Trout (*Salmo trutta*) Spawners and Postspawners to Acidic Aluminum-Rich Stream Water." *Water, Air, and Soil Pollution WAPLAC* 36(3): 371-379.
- Mutvei, H., E. Dunca, et al. (1996). "Structure and growth rates of bivalve shells as indicators of environmental changes and pollution." *Bulletin de l'Institut Oceanographique (Monaco)* 0(SPEC. ISSUE 14 PART 4): 65-72.
- Norrgrén, L. and E. Degerman (1993). "Effects of different water qualities on the early development of Atlantic salmon and brown trout exposed in situ." *Ambio* 22(4): 213-218.
- Poleo, A. B. S., E. LYDERSEN, et al. (1994). "Increased mortality of fish due to changing Al-chemistry of mixing zones between limed streams and acidic tributaries." *Water Air and Soil Pollution* 75: 339-351.
- Rosseland, B. O., I. A. Blakar, et al. (1992). "The mixing zone between limed and acidic river waters: complex aluminium chemistry and extreme toxicity for salmonids." *Environmental Pollution* 78(1-3): 3-8.
- Rosseland, B. O., O. K. Skogheim, et al. (1986). "Limestone slurry reduces physiological stress and increases survival of Atlantic salmon (*Salmo salar*) in an acidic Norwegian river." *Canadian Journal of Fisheries and Aquatic Sciences* 43(10): 1888-1893.
- Sangalang, G. B. and H. C. Freeman (1987). "The effects of limestone treatment of an acidic river on steroid metabolism and reproduction in the Atlantic salmon *Salmo-salar*." Hemphill, D. D. (Ed.). *Trace Substances in Environmental Health; 21st Annual Conference*, St. Louis, Missouri, USA, May 25-28, 1987. Xv+617p. University of Missouri: Columbia, Missouri, USA. Illus. Maps. Paper: 121-129.
- Sangalang, G. B., H. C. Freeman, et al. (1988). Studies on the mitigation of acid precipitation-induced effects on adult Atlantic salmon (*Salmo salar*), 1987 experiment. *Ices, Copenhagen, Counc. Meet. of the Int. Counc. for the Exploration of the Sea, (Bergen (Norway))*, (6 Oct 1988).
- Sangalang, G. B., H. C. Freeman, et al. (1990). "Effects of Diet or Liming on Steroid Hormone Metabolism and Reproduction in Atlantic Salmon (*Salmo salar*) Held in an Acidic River." *Canadian Journal of Fisheries and Aquatic Sciences* CJFSDX 47(12): 2422-2430.
- Schofield, C. and C. Keleher (1996). "Comparison of brook trout reproductive success and recruitment in an acidic adirondack lake following whole lake liming and watershed liming." *Biogeochemistry* 32(3): 323-337.
- Smith, E. J. and J. L. Sykora (1976). "Early Developmental Effects of Lime Neutralized Iron Hydroxide Suspensions on Brook Trout and Coho Salmon." *Transactions of the American Fisheries Society* 105(2): 308-312.
- Staurnes, M., L. P. Hansen, et al. (1996). "Short-term exposure to acid water impairs osmoregulation, seawater tolerance, and subsequent marine survival of smolts of Atlantic salmon (*Salmo salar* L.)." *Canadian Journal of Fisheries and Aquatic Sciences* 53(8): 1695-1704.
- Teien, H. C., B. Salbu, et al. (2005). "Fish mortality during sea salt episodes - catchment liming as a countermeasure." *Journal of Environmental Monitoring* 7(10): 989-998.
- Teien, H. C., B. Salbu, et al. (2004). "Transformation of positively charged aluminium-species in unstable mixing zones following liming." *Science of the Total Environment* 330(1-3): 217-232.
- Teien, H. C., W. J. F. Standring, et al. (2004). "Mobilization of aluminium and deposition on fish gills during sea salt episodes - catchment liming as countermeasure." *Journal of Environmental Monitoring* 6(3): 191-200.
- Teien, H.-C., F. Kroglund, et al. (2006). "Gill reactivity of aluminium-species following liming." *Science of the Total Environment* 358(1-3): 206-220.

Uthe, J. F. (2020). "Studies on Mitigation of the Effects of Acidic Precipitation on Adult Atlantic Salmon (*Salmo salar*)--Introduction." *Canadian Journal of Fisheries and Aquatic Sciences* CJFSDX 47(12): 2420-2421.

Verboost, P. M., M. H. G. Berntssen, et al. (1995). "The toxic mixing zone of neutral and acidic river water: acute aluminium toxicity in brown trout (*Salmo trutta* L.)." *Water, Air, & Soil Pollution* 85(2): 341-346.

Weatherley, N. S., G. P. Rutt, et al. (1991). "Liming acid streams: Aluminium toxicity to fish in mixing zones." *Water, Air, & Soil Pollution* 55(3-4): 345-353.

Weatherley, N. S., S. P. Thomas, et al. (1989). "Chemical and biological effects of acid, aluminium and lime additions to a Welsh hill-stream." *Environmental Pollution* 56(4): 283-297.

Weisbart, M., P. K. Chakraborti, et al. (1989). "Effect of acid environments on cortisol and cortisol receptor activity in Atlantic salmon, *Salmo salar*." *Fish Physiology and Biochemistry* 7(1): 267-272.

Willis, D. E., A. J. Edwards, et al. (1991). "Effect of Environmental pH on the Hepatic Mixed Function Oxidases in Atlantic Salmon (*Salmo salar*)." *Canadian Journal of Fisheries and Aquatic Sciences* CJFSDX 48(3): 445-447.

Witters, H. E., S. van Puymbroeck, et al. (1996). "Physicochemical changes of aluminium in mixing zones: mortality and physiological disturbances in brown trout (*Salmo trutta* L.)." *Environmental Toxicology and Chemistry* 15(6): 986-996.

Zurbuch, P. E. (1963). "Dissolving limestone from revolving drums in flowing water." *Trans. Amer. Fish. Soc.* 92: 173-178.

2. Papers excluded due to covering liming to mitigate acidification from mining

Bae, D. Y., H. K. Kumar, et al. (2010). "Integrative ecological health assessments of an acid mine stream and in situ pilot tests for wastewater treatments." *Ecological Engineering* 36(5): 653-663.

Boyles, J. M., D. Cain, et al. (1974). "Impact of Argo Tunnel Acid Mine Drainage, Clear Creek County, Colorado." In: *Water Resources Problems Related To Mining* 18: 41-53.

Christensen, C. L. and P. A. Archibald (1976) "Effectiveness of lime neutralization in stream recovery from acid mine pollution as indicated by species of diatoms." *Phytologia* 34(1):5-17.

Cole, M. B. Short-term Effects of Enhanced Limestone Treatment of Acid Mine Drainage on Selected Stream Fishes and Macroinvertebrates. PhD Wildlife and Fisheries Science, Penn State, University Park., Penn State. PhD 120.

Cole, V. W. (1960). "Impounding and liming acid mine drainage." *Industr. Wastes.* 5: 10-11.

Cravotta Iii, C. A., R. A. Brightbill, et al. (2010). "Abandoned Mine Drainage in the Swatara Creek Basin, Southern Anthracite Coalfield, Pennsylvania, USA: 1. Stream Water Quality Trends Coinciding with the Return of Fish." *Mine Water and the Environment*: 1-24.

Cravotta Iii, C. A. and S. J. Ward (2008). "Downflow limestone beds for treatment of net-acidic, oxic, iron-laden drainage from a flooded Anthracite Mine, Pennsylvania, USA: 1. Field evaluation." *Mine Water and the Environment* 27(2): 67-85.

DeNicola, D. M. and M. G. Stapleton (2002). "Impact of acid mine drainage on benthic communities in streams: the relative roles of substratum vs. aqueous effects." *Environmental Pollution* 119(3): 303-315.

Herricks, E. E. and J. John Cairns (2008). *Rehabilitation of Streams Receiving Acid Mine Drainage*, Biology Department and Center for Environmental Studies Virginia Polytechnic Institute and State University Blacksburg, Virginia 24061 Bulletin 66.

Patty, S. S., N. Roth, et al. (1999). "Maryland, the Power Plant Research Program, and the Chesapeake Bay watershed." *Science of the Total Environment* 240(1-3): 171-188.

Perrin, C. J., B. Wilkes, et al. (1992). "Stream periphyton and benthic insect responses to additions of treated acid mine drainage in a continuous-flow on-site mesocosm." *Environmental Toxicology and Chemistry* 11(11): 1513-1525.

Phillips, G. and J. Lipton (1990). "Injury to aquatic resources caused by metals in Montana's Clark Fork river basin: historic perspective and overview." *Canadian Journal of Fisheries and Aquatic Sciences* 52(9): 1990-1993.

Ross, R. M., E. S. Long, et al. (2008). "Response of macroinvertebrate communities to remediation-simulating conditions in Pennsylvania streams influenced by acid mine drainage." *Environmental Monitoring and Assessment* 145(1-3): 323-338.

Simmons, J., T. Andrew, et al. (2006). "Small-Scale Chemical Changes Caused by In-stream Limestone Sand Additions to Streams." *Mine Water and the Environment* 25(4): 241-245.

Skinner, W. D. and D. E. Arnold (1990). "Short term biotic response before and during the treatment of an acid mine drainage with sodium carbonate." *Hydrobiologia* 199: 229-235.

Starnes, L. B., J. B. Maddox, et al. (1978). "Effects of Remedial Reclamation Treatments on Terrestrial and Aquatic Ecosystems-a Progress Report." US Fish and Wildlife Service/Et AL Surface Mining and Fish/Wildlife Needs in East US Symp, W VA 276(3).

3. Papers excluded for other reasons (*reason*)

St Mary's Wilderness Liming Project,
<http://csm.jmu.edu/st.marys/Background/Liming/liming.html>. (*website, have papers from the study that contain more of the results*)

(1995). The effects of catchment liming on Llynau Gamallt 1990-1995, Draft Report.A, (*Only lake data presented*)

(1995). "Liming of acidified lakes and rivers in Norway: A presentation of the Norwegian liming programme and of an integrated project in the Tovdalselva water system." *Lake and Reservoir Management* 11(2). (*report of what will be done, later data on river got*)

Mosquito Creek Sportsman Association (MCSA). (2003). Mosquito Creek Watershed Restoration Project, Mosquito Creek Sportsman Association. (*plan for project, no results presented*)

North Atlantic Salmon Conservation Organization (NASCO) and Conserving and restoring wild Atlantic salmon "Protection, Restoration and Enhancement of Salmon Habitat Focus Area Report EU-Sweden". (*no data on effect of liming*)

Nova Scotia Salmon Association (NSSA) (2007). West river acid rain mitigation project. (*no primary data*)

Aatland, A. and B. T. Barlaup (1995). "Avoidance of toxic mixing zones by Atlantic salmon (*Salmo salar* L.) and brown trout (*Salmo trutta* L.) in the limed River Audna, southern Norway." *Environmental Pollution* 90(2): 203-208. (*distribution of fish with mixing/liming not density/diversity*)

Abrahamsen, H. and D. Matzow (1984). "Use of lime slurry for deacidification of running water." *Verhandlungen. Internationale Vereinigung fuer theoretische und angewandte Limnologie/Proceedings. International Association of Theoretical and Applied Limnology/Travaux. Association internationale de Limnologie theorique et appliquee.* (*study later reported in a paper*)

Alenas, I., E. Degerman, et al. (1995). "Liming strategies and effects: The River Hogvadsan case study." *Liming of acidified surface waters: A Swedish synthesis: 363-374.N* – (*all of book is incl. as separate entry*)

Alenäs, I., B. Ingvar Andersson, et al. (1991). "Liming and reacidification reactions of a forest lake ecosystem, lake Lysevatten, in SW Sweden." *Water, Air, & Soil Pollution* 59(1): 55-77. (*only info on lake*)

- Andersen, D. O. (2006). "Labile aluminium chemistry downstream a limestone treated lake and an acid tributary: Effects of warm winters and extreme rainstorms." *Science of the Total Environment* 366(2-3): 739-748. (*no data on biota*)
- Andersson, P. (1995). "Liming strategies and effects: The Prastvallsbacken Stream case study." *Liming of acidified surface waters: A Swedish synthesis: 375-381. (all book is included in separate entry)*
- Angéli, N., E. Dambrine, et al. (2009). "Neutralisation de ruisseaux forestiers acides par amendement du bassin versant. Mise en relief des connaissances existantes avec des expérimentations dans le massif vosgien (Neutralisation of acidic forest streams by treatment of the catchment area based on current knowledge and experiments in the vosges massif)." *Revue Forestière Française, (special issue on Forest soils amendments. Seminar on 'Acidic forest soils, calcium amendments and ecosystem functioning', Carrouges, France, 8-9 November, 2007)* 61: 201-327. (*only chemical data*)
- Appelberg, M., P. E. Lingdell, et al. (1995). "Integrated studies of the effects of liming acidified waters (ISELAW-programme)." *Water Air and Soil Pollution* 85(2): 883-888. (*only the lakes data presented*)
- Appelberg, M. and T. Svenson (2001). "Long-term ecological effects of liming - The ISELAW programme." *Water Air and Soil Pollution* 130(1-4): 1745-1750. (*no primary data presented*)
- Baranovskaya, V. K., T. A. Vlasova, et al. (1972). "Some physical and geographic and biological characteristics of the vychegda river in relation to piscicultural problems." *Izvestiya Komi Filiala Vsesoyuznogo Geograficheskogo Obshchestva SSSR* 2(4): 58-65. (*No abstract available - cannot find article or author*)
- Barlaup, B. T. (1997). *Ecological responses of brown trout (Salmo trutta L.) to temporal and spatial variation in water chemistry caused by acidification and liming. Institute of Zoology. Bergen, Norway, University of Bergen. Doctor scientiarum thesis: 37 p. (associated papers retrieved from author but data is only on lake, physiological or mixing zones)*
- Battarbee, R. W., N. A. Logan, et al. (1992). "Other aquatic biology: flora and fauna." *Restoring acid waters: Loch Fleet 1984-1990: 289-330. (Relevant info given in Milner 1995)*
- Bell, R. M. (1992). "Liming design and strategy at Loch Fleet." *Restoring acid waters: Loch Fleet 1984-1990: 153-171. (Background only)*
- Bergquist, B. (2001). "Prov fiskeresultat år 2000. IKEU-programmets vattendrag och miljöövervakningens referensvattendrag. (Test fishing results in 2000. IKEU program streams and environmental monitoring reference streams)." *Rapport Fiskeriverkets Sötvattenslaboratorium. (IKEU, included data covered by primary data received from Tobias Verde)*
- Bishop, K. H. and H. Hultberg (1995). "Reversing acidification in a forest ecosystem: the Gardsjon covered catchment." *Ambio* 24(2): 85-91. (*only lake data*)
- Bjerknes, V. and T. Tjomsland (2001). "Flow and pH modelling to study the effects of liming in regulated, acid salmon rivers." *Water Air and Soil Pollution* 130(1-4): 1409-1414. (*no data on biota*)
- Bohman, P., B. Å. Jansson, et al. (2005). "Prov fiske efter flod-och signalkräfta 2005. Specialprojekt inom ramen för IKEU. ." *Fiskeriverket, Sötvattenslaboratoriet, PM 2005-12-07. (IKEU, crayfish data but no data on differences with liming)*
- Borg, H., P. Andersson, et al. (1995). "Influence of wetland liming on water chemistry of acidified mountain streams in Lofsdalen, Central Sweden." *Water, Air, & Soil Pollution* 85(2): 907-912. (*no data on biota*)
- Bostedt, G., S. Innala, et al. (2008). "Acidification remediation alternatives: exploring the temporal dimension with cost benefit analysis." (366): 41 pp. (*cost benefit analysis - got newer version*)

- Bostedt, G., S. Löfgren, et al. (2010). "Acidification remediation alternatives: exploring the temporal dimension with cost benefit analysis." *Ambio* 39(1): 40-48. (*economic model not primary data on abundance or diversity of biota*)
- Boyd, C. E. and W. W. Walley (1975). "Total Alkalinity and Hardness of Surface Waters in Alabama and Mississippi." Alabama Agricultural Experiment Station, Bulletin 465(16).(*no data on biota*)
- Bradley, D. C. (2002). Long-term dynamics of upland stream invertebrates in relation to acidification, recovery and climatic cycles., Wales, Cardiff. Ph.D. (*have paper on the liming study part of the thesis*)
- Brandrud, T. E. (2002). "Effects of liming on aquatic macrophytes, with emphasis on Scandinavia." *Aquatic Botany* 73(4): 395-404. (*only plant data included*)
- Brocksen, R. W. and P. W. Emler (1988). "Living lakes: An aquatic liming and fish restoration demonstration program." *Water, Air, & Soil Pollution* 41(1): 85-93. (*no data on biota*)
- Brocksen, R. W., H. W. Zoetl, et al. (1988). "Experimental liming of watersheds: an international cooperative effort between the United States and West Germany." *Water, Air, & Soil Pollution* 41(1): 455-471. (*no primary data on biota*)
- Brown, S. B., J. F. Klaverkamp, et al. (1989). Responses of Atlantic salmon (*Salmo salar*) to acidic Nova Scotia rivers and to experimental amelioration. 32. Conf. on Great Lakes Research, Madison, WI (USA), 30 May - 2 Jun 1989. (*Conference proceedings – studies covered by other full articles*)
- Clair, T. A. and A. Hindar (2005). "Liming for the mitigation of acid rain effects in freshwaters: a review of recent results." *Environmental Reviews* 13(3): 91-128. (*review – no primary data*)
- Dahlberg, M., U. Beier, et al. (2006). Trender i fiskbestånd i okalkade vattendrag i relation till kemisk återhämtning. (Trends in fish stocks in the unlimed streams in relation to chemical rejuvenation), Fiskeriverket, Sötvattenslaboratoriet Drottningholm, Projektrapport till Naturvårdsverket, Version 2006-12-01. (*IKEU, changes due to reduction in acid rain not liming*)
- Dalziel, T. R. K., A. Dickson, et al. (1992). "Targets and time-scales of liming treatments." *Restoring acid waters: Loch Fleet 1984-1990*: 365-391. (*no data on biota*)
- Dalziel, T. R. K., M. V. Proctor, et al. (1988). "Hydrochemical budget calculations for parts of the loch Fleet catchment before and after watershed liming." *Water, Air, & Soil Pollution* 41(1): 417-434. (*no data on biota*)
- Dalziel, T. R. K., M. V. Proctor, et al. (1992). "Water Quality of Surface Waters Before and After Liming." *Restor Acid Waters: Loch Fleet 1984-1990* 229. (*no data on biota*)
- Dalziel, T. R. K., E. J. Wilson, et al. (1994). "The effectiveness of catchment liming in restoring acid waters at Loch Fleet, Galloway, Scotland." *Forest Ecology and Management* 68(1): 107-117. (*no data on biota*)
- Diamond, M., D. Hirst, et al. (1991). The effect of liming agricultural land on the water quality of the River Esk, Cumbria. *Acid Deposition: Origins, Impacts and Abatement Strategies*. Berlin, Springer Verlag: 227-238. (*also published as a journal article which is included*)
- Donald, A. P. and A. S. Gee (1992). "Acid waters in upland Wales: causes, effects and remedies." *Environmental Pollution* 78(1-3): 141-148. (*no data on biota*)
- Donnelly, A., E. Jennings, et al. (2003). "A review of liming options for afforested catchments in Ireland." *Biology and Environment: Proceedings of the Royal Irish Academy, Section B* 103B(2): 91-105. (*review – no primary data*)
- Donnelly, A., E. Jennings, et al. (2004). Liming: a potential option in afforested catchments in Ireland, COFORD, Connects. (*no primary data*)

Downey, D. M. (1991). "Single point single application limestoning of Virginia USA trout streams." Abstracts of Papers American Chemical Society 201(1-2): ENVR 4.N (*abstract only available not full articles, later paper on study published and included*)

Driscoll, C. T., C. P. Cirimo, et al. (1996). "The experimental watershed liming study: Comparison of lake and watershed neutralization strategies." *Biogeochemistry* 32(3): 143-174. (*no data on biota*)

EAW and E. A. Wales) (2002). Glaslyn / Dwyryd Salmon And Sea Trout Action Plan, Environment Agency Wales, FER (Northern Area). (*no data on effect of liming*)

Edwards, R. W., et al. (1990). *Acid Waters in Wales*, Kluwer Academic Publishers, Norwell, Massachusetts. (*no data on impact of liming on biota*)

Environment Agency Wales – Fisheries, Ecology and Recreation (Northern Area) (2002). Dyfi Salmon And Sea Trout Action Plan, Environment Agency Wales – Fisheries, Ecology and Recreation (*no data on impact of liming*)

Eriksson, M. O. G. (2006). "Breeding success of the Red-throated Diver *Gavia stellata* in relation to water chemistry and composition of the fish stocks in different fishing lakes." *Ornis Svecica* 16(4): 211-231. (*data on lakes only*)

Eriksson, F., E. Hornstrom, et al. (1983). "Ecological effects of lime treatment of acidified lakes and rivers in Sweden." *Hydrobiologia* 101(1-2): 145-163. (*no primary data*)

Eriksson, M. O. G., L. Henrikson, et al. (1989). "Metal contents in liver tissues of non-fledged Goldeneye, *Bucephala clangula*, ducklings: A comparison between samples from acidic, circumneutral, and limed lakes in South Sweden." *Archives of Environmental Contamination and Toxicology* 18(1): 255-260. (*effect liming birds not fish or inverts*)

Evans, D. M. (1994). *Sea trout (Salmo trutta L.) studies of the river Tywi, South Wales.*, Hull. Ph.D. (*emailed author to get details, no response received*)

Farley, D. A. and A. Werritty (1989). "Hydrochemical Budgets for the Loch Dee Experimental Catchments, Southwest Scotland (1981-1985)." *Journal of Hydrology JHYDA7* 109(3): 351-368. (*no data on biota*)

Farmer, A. M. (1992). "Catchment liming and nature conservation." *Land Use Policy* 9(1): 8-10. (*no primary data*)

Fishermen, C. "Lime dosing to restore the Upper Towy (adapted from an EA publication)." from http://www.carmarthenshire.org.uk/Llyn%20Brianne%20Reservoir/lime_dosers.htm. (*got EA publication*)

Flick, W. A., C. L. Schofield, et al. (1982). "Remedial actions for interim maintenance of fish stocks in acidified waters." *Acid Rain/Fisheries: Proceedings of International Symposium*. Cornell University, Bethesda, Md 306(15Aa HAI). (*conference proceedings, cannot find details, likely to only be an abstract and appears not to have any primary data*)

Fraser, J. E. and D. L. Britt (1982). "Liming of Acidified Waters: A Review of Methods and Effects on Aquatic Ecosystems." *Fish and Wildlife Service Report FWS/OBS 80(40)*. (*review, not primary data*)

Gammon, J. R. (1970). "The effect of inorganic sediment on stream biota." *U.S. envir. Protect. Ag. Wat. Qual. Office. Wat. Pollut. Control Res. Ser. 18050DWC 12(70)*. (*not about impact of liming to mitigate acidification*)

Gammon, J. R. (1970). "The Effect of Inorganic Sediment on Stream Biota." Copy Available From Gpo Sup Doc As Sn 25(204). (*not about impact of liming to mitigate acidification*)

Gammon, J. R. and D. S. White (1971). "The effect of limestone sediment on macro invertebrates." *Proceedings of the Indiana Academy of Science* 80: 175. (*paper on early report, not about liming to mitigate acidification*)

Garrett, P. (1986). "Loch of Hope." *Water Bulletin. no. 227: 6-7*. (*loch fleet study covered by other articles*)

- Gee, A. S. (2001). "A Strategic Appraisal of Options to Ameliorate Regional Acidification." *Water, Air, & Soil Pollution* 130(1-4): 1397-1402. (*review, not primary data*)
- Godfrey, P. J. (1988). Acid rain in Massachusetts 1988, the massachusetts acid rain research program in action, Water Resources Research Centre, University of Massachusetts at Amherst. (*no primary data*)
- Goldsworthy, S. J. (1987). The use of the microflora of rivers to assess water quality, Manchester. M.Sc. (*liming not to mitigate acidification but as a soil improver*)
- Granström, P. (2005). "Flodpärlmusslan i Enångersån. En inventering inom ramen för IKEU-projektet på uppdrag av Fiskeriverket." Länsstyrelsen i Gävleborg 2005-11-23. (*IKEU – no data on population differences with liming*)
- Grennfelt, P. (1985). "Acidification of Lakes and Streams in Sweden." Swed Czechoslovak Power Plant Emissions Semin, Ceske Budejovice, Czechoslovakia 77(10). (*review – not primary data*)
- Gunn, J., S. Sandoy, et al. (2003). "Special issue: Biological recovery from acidification: Northern Lakes Recovery Study." *Ambio* 32(3): 161-248. (*no primary data*)
- Haakanson, L., P. Andersson, et al. Measures to reduce mercury in lake fish. Final report from the liming-mercury-caesium project. (*Report could not be found*)
- Halfyard, E. A. (2008). "Initial results of an Atlantic salmon river acid mitigation program." *Masters Abstracts International* 47(01). (*request for report sent to organiser but no response received*)
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Standage, R. W., D. M. Downey, et al. (1990). Stream pH modification with single-point, single-time, limestone application: Little Stony Creek, Virginia. 120th Annual Meeting of the American Fisheries Society, , Pittsburgh, PA (USA). *(only abstract available)*

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Stoner, J. H. (1987). "Llyn Brienne acid waters project: an investigation into the effects of afforestation and land management on stream acidity." *Welsh Water. Treharris* 40705(91). *(data on biota in later publications)*

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- Svenson, T., W. Dickson, et al. (1995). "The Swedish liming programme." *Water, Air, & Soil Pollution* 85(2): 1003-1008. (*no primary data on biota*)
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- Teien, H. C. (2005). Transformation of aluminium species in unstable aquatic mixing zones - mobility and bioavailability towards fish. Doctor Philosophiae Thesis 2005:01. As, Norwegian University of Life Sciences, Department of Plant and Environmental Sciences: 85 pp. (*most chapters published, these found and looked at*)
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- Torgersen, H. (1934). "Experiments on the treatment of acid, fish-free lakes." *Stangfiskeren* 1934: 38-46. (*cannot find article*)
- Turnpenny, A. W. H. (1992). "Alternatives to Catchment Liming." *Restor Acid Waters: Loch Fleet 1984-1990* 173. (*no data on biota*)
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- Underwood, J., A. P. Donald, et al. (1987). "Investigations into the use of limestone to combat acidification in 2 lakes in west Wales." *Journal of Environmental Management* 24(1): 29-40. (*lakes only*)
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