

purple loosestrife

and the “bounding” of nature in north american wetlands

by John Sandlos

One of the more well known themes among the Christian parables is the separation of the righteous and pure from the impure and the unholy. In one notable example, Christ recounts the experience of a farmer whose enemies have come in the night to plant weeds in his wheat field. When one of the servants asks whether he should pull the weeds, the farmer responds: “No... because while you are pulling the weeds, you may root up the wheat with them. Let both grow together until the harvest. At that time I will tell the harvesters: first collect the weeds and tie them in bundles to be burned, then gather the wheat and bring it into my barn” (Matthew 13:29-30). While this parable may appear to the modern rational mind as nothing more than a quaint expression of Judeo-Christian ethno/agro-science, the persistent reader is rewarded with a deeper understanding of the importance of weed control further down the page. At the request of His disciples Christ explains the parable in terms of a larger cosmological purpose: “the weeds are the sons of the evil one, and the enemy who sows them is the devil.... As the weeds are pulled up and burned in the fire, so it will be at the end of the age. The Son of Man will send out his angels, and they will weed out of his kingdom everything that causes sin and all who do evil.... Then the righteous will shine like the sun in the kingdom of their Father” (Matthew 13:39-43).

Clearly, to the early Christian, the act of weeding carries a greater symbolic weight than is implied by the basic physical and ecological need to produce an adequate food supply. The obvious lesson of the parable – how and when to remove weeds – invites the reader to participate in the larger cosmic struggle of establishing God’s kingdom on earth. The physical source of the symbol and the symbolic action are not separate, thus allowing the “true believer” to participate fully in the established natural and moral order of the universe. Physical “facts” and valuative ethical principles are not separate in this world view, and the status of nature (i.e. the farmers field) as a social and cultural space (i.e. the “emerging” kingdom of God) is implied throughout the parable.

It is quite likely that the denizens of contemporary agricultural and botanical institutions devoted to the loosely defined practice of “weed science” no longer see themselves as participating in a cosmic struggle to establish God’s kingdom on earth. Indeed, what constitutes the traditional scientific world view is a life world that is devoid of purpose, mystery, and moral significance. The Cartesian universe only allows for a single actor – the knower – to approach a natural world that waits passively to be “known,” and thus can no longer be a repository for the socio-cultural residues of myth-making humanity. Indeed, the “natural” knowledge derived from the scientific practice of weed control exists only for a single purpose: to control and eradicate the plants that humans designate as weeds.

However, science can never be divorced from its complex socio-cultural and political origins. Even the most seemingly innocuous and innocent disciplines within the scientific enterprise (including weed science) produce and reflect a social world view as much as they merely record the objective facts of nature. What follows is a discussion of the scientific work

surrounding the invasive (to North America) European plant Purple Loosestrife (*Lythrum salicaria*). The intention is not to prove or disprove the scientific orthodoxy concerning the ecological “effects” of this aquatic perennial. Rather, my goal is to illustrate that the science surrounding purple loosestrife has neither divorced itself from social influence, nor ceased to act as an arbiter in social and political affairs. Given this expanded context, the scientific war against purple loosestrife becomes not merely an effort to liberate nature from the depredations of a noxious weed, but remains part of the larger mythic battle for control over the universe.

the purple loosestrife “problem”

An information pamphlet released a few years ago by Ducks Unlimited describes the threat posed to North Americans by expanding populations of purple loosestrife. Under an ominous heading simply titled “The Invader,” there is an account of the spreading scourge:

Purple Loosestrife invades wetlands and gradually takes them over. The weed ultimately chokes out all native vegetation, creating a dense purple landscape almost totally devoid of wildlife. Purple loosestrife came from Europe over a century ago. Its unrelenting spread across North America was aided by the absence of natural predators.

While the quoted material obviously employs the language and tone of a popular information leaflet, it does effectively summarize the main arguments put forward in support of controlling purple loosestrife by the scientific community: native wildlife doesn’t use it as habitat or food, native wetland plants are displaced by the invader, and the spread of the plant is facilitated by a lack of natural predators in North America.

Much of the evidence for these assertions comes from a 1987 paper authored by Daniel Q. Thompson, Ronald L. Stuckey and Edith B. Thompson. A remarkable document in many ways, the paper recounts history of purple loosestrife colonization in North America, its apparent impacts, and discusses several possible control methods. It includes a synthesis of a vast body of purple loosestrife research, as well as the field observations of the authors. It has become, in many ways, the Bible of purple loosestrife management and control.¹

A recent paper by Mark Anderson (1995) has suggested that the largely visual nature² of Thompson’s evidence constitutes a subjective interpretation of qualitative changes in the wetland biotic community.³ While the anecdotal nature of Anderson’s evidence proves nothing regarding the interaction of purple loosestrife with native flora and fauna, it does call into question Thompson’s claim to have derived the absolute truth concerning native wildlife interactions with purple loosestrife from objective scientific facts. Indeed, the use of subjective judgments in Thompson’s

the scientific manager’s role in this “world assault” on “earth” is that

work is most readily confirmed by his remarkable statement that "although we need quantitative measurements of the effects of various stages of *L. salicaria* invasion on the structure, function, and productivity of North American wetland habitats, the replacement of a native wetland plant community by a monospecific stand of an exotic weed *does not require a refined assessment* to demonstrate that a local ecological disaster has occurred" (my emphasis; 1987: 25).

Thompson's statement is not so much a reflection of "bad" science, but illustrates a deeper problem with the scientific claim of objectivity. Despite the best attempts of the "objective" scientist to divorce fact from value, he/she must construct disembodied facts into a core of meaning that forms a conclusive narrative structure for the scientific text. Like a historian, the scientist never simply records objective facts, but instead arranges a body of evidence into a structured account that attempts to produce a definitive meaning. The process of meaning production places the scientist and his/her readers in a discursive community that is intimately related to the larger process of cultural reproduction. In other words, the creation of meaning can never be divorced from the social context in which it is embedded. As Haraway puts it, "what determines a 'good' story in the natural and social sciences is partly decided by available social visions of these possible worlds. Descriptions are determined by vision; facts and vision are perceived through stories; the worlds for which human beings contest are made of meanings" (1988: 80). The argument here is that science is *necessarily* subjective because it is partly a product of and partly produces the cultural context in which it is immersed. The problem with the science of purple loosestrife can therefore be located not in "mistakes" made in the field, but instead in the refusal of the scientist to recognize and make explicit the social and cultural boundaries and categories that encapsulate the story of purple loosestrife in North America.

the problem with exclusion: nature as commodity; nature as dirt

man is in the habit of valuing things according to how well they serve his purposes.... Given his need for objects and his use for them, he draws the conclusion they have been created to serve him.... Why should he not ignore a plant that is useless to him and dismiss it as a weed, since it really does not exist for him?
—Goethe

Human society, both contemporary and ancient, is rife with conceptual boundaries and divisions. In the classic Cartesian mode, our brain is separate from the body, our body is bounded by skin, which is enclosed within a culture, which in turn constructs borderlines between civilization and the surrounding world of nature. Of course, the boundaries are more permeable than we like to admit; disease enters through the skin and wild animals dance in and out of the forest at the edge of the domesticated farm. Nonetheless, the conceptual boundaries remain fixed, at least in the human mind, and transgressions are not permitted to alter the sanctified categories of being.

Of course, the creation of the boundaries and the placing of natural entities within these conceptual categories is entirely a human construct; it would not exist if we did not exist.⁴ As the anthropological work of Mary Douglas has shown us, the notion of boundary transgression, or pollution, has its origin in the social construction of reality. If culture "provides in advance some basic categories, a positive pattern in which ideas and values are tidily ordered" and "above all... has authority" (1966: 38-39), then uncleanness, or pollution, "is matter out of place," and "we must

approach it through order. Uncleanliness or dirt is that which must not be included if a pattern is to be maintained" (1966: 40).

While Douglas' earlier work does concentrate on purity rituals and taboo in so-called primitive societies, she has applied her cultural theory of pollution to the secular and supposedly rational tenets of contemporary western society. Pollution ideas are, according to Douglas and her colleague Aaron Wildavsky, "an instrument of control" that gives "the central establishment... the monopoly of explaining the natural order"⁵ (1982: 47). Thus, "from the point of view of the central political establishment, the socially inferior are morally and physically contaminating, to be segregated and forcibly confined, punished if they try to break out" (47).

While the relevance of pollution categories to the governance of human relations is obvious to any student of history, there remains the question of how this social action relates to the concept of natural pollution (i.e. an invasive exotic such as purple loosestrife). One may fairly argue that the toxicity of DDT was not socially constructed, and that its subsequent ban in North America was of immeasurable benefit to wildlife in general and raptors in particular. While I would not argue with this point directly, I do suggest that the *presence* of DDT in "our" natural environment was/is a social construction; it belonged because the "pollution" of crop eating insects did not. When a nature without birds and, more importantly, a civilization without humans was contemplated by Rachel Carson, only then was DDT removed and "safer" alternatives found to control insects. The categories that make up what is natural and what is pollution are whatever humans want them to be and, more importantly, whatever the central power structures of the society assume they must be. As Douglas and Wildavsky remind us, "nature is what the center establishment sees as natural" (1982: 47).

With the latter point in mind, we must remember that the mere mention of the word "weeds" in the human context has evoked a whole range of metaphorical association with the "battle" to control nature.⁶ From the farmer's field to the suburban garden, no expense has been spared by the chemical industry and its patrons to rid nature of the first stages of plant colonization and succession. Of course, the war on weeds has extended beyond the realm of necessity and, as Evernden reminds us, they "have become noxious not because of their effect on cattle, but because of their conceptual effect on suburbanites; they are a *pollutant*. They are intrusions into the order of the lawn, and into the domain of human willing. Clearly then, as "natural" (i.e. wild) entities which must be excluded, "weeds are dirt, as is the rest of nature" (Evernden 1992: 119).

Nonetheless, the war on purple loosestrife is apparently conducted on behalf of nature, an attempt to liberate the biotic community from the tyrannical influence of a life destroying invasive weed. Indeed, purple loosestrife control is portrayed by its practitioners as an environmental initiative intended to save nature rather than control it. Accordingly, the purple loosestrife literature, scientific and otherwise, dutifully discusses the impacts of the weed on endangered *species* and threatened biodiversity more generally. Purple loosestrife is a pollution according to the scientific community, and all of nature suffers under its pervasive influence.

Regardless of the both perceived and actual ecological effects of the purple invader, it is apparent the "pollution" ideologies of the sociological center have been extended in to the wetlands of North America and, consequently the scientific effort to "liberate" nature from purple loosestrife has failed to de-couple itself from its philosophical origin as an instrument to dominate and control nature to the satisfaction of human desires.

of the "sane assassin," an emotionless defender of center values against the depredations

The ecologist Mark Anderson has pointed out from his literature survey of purple loosestrife work that "birds, particularly game birds and waterfowl, provide the bulk of the justification for loosestrife management" (1995: 227). However, no species other than the canvasback was identified in the Thompson paper as endangered in any way by purple loosestrife. Similarly, the impact of purple loosestrife on fur bearing mammals was also discussed at great length by Thompson, though none of the species (muskrat, mink) highlighted in the Thompson paper can be considered threatened in North America. What is threatened by purple loosestrife is the economics of exploiting such species, and Thompson (1987: 43) carefully outlines the millions of dollars that will be lost to the economy of the Midwestern United States due to any loss of hunting, trapping, and recreation revenues due to a decline in the production of the wetland "resource."

The crux of the matter, it seems, is not the preservation of a wetland community, but the maintenance of a social pattern that demands the dominance of human interests and influence in the natural landscape. Reptiles and amphibians, arguably the life forms that have suffered the most dramatic decline due to the commercial destruction of wetlands, have hardly been discussed in the purple loosestrife literature. Even the rhetoric of preserving the native plant community against an exotic invader rings hollow when one considers the "fifty year struggle" of wetland managers to remove native stands of cattails to encourage "wildlife diversity and abundance" (Thompson 1987: 2), a process that is remarkably similar in concept and content to the "duck producing" purple loosestrife campaign.⁸ For the hunting groups that have been supporting purple loosestrife control, and for their scientific allies in the universities and government agencies devoted to wildlife management, the wetland exists merely as a waterfowl producing factory, and anything, be it purple loosestrife or cattails, that threatens this assigned sociological role must be exterminated as a form of pollution regardless of the effect on the wider wetland community.⁹ This obsession with managing wetlands "pollutants" to produce a "maximum sustainable yield" of a desired species/commodity reinforces the basic tenets and conceptual categories of the capitalist industrial society as "the preoccupation with productionism that has characterized so much parochial Western discourse and practice" becomes "hypertrophied into something quite marvelous: the whole world is remade into the image of commodity production" (Haraway 1992: 297).¹⁰

Moreover, the transgressive ontological boundaries erected by the extreme anthropocentric categories of the commodity culture prevent a more complete analysis of its relationship to the purple loosestrife "problem." Alfred Crosby has illustrated that exotic species have not historically been invaders in their own right, but were instead followers in the wake of European expansion. According to Crosby, "the success of the portmanteau biota and of its dominant member, the European human, was a team effort by organisms that had evolved in conflict and cooperation for a long time" (1986: 293). In other words, invasive organisms entered North America as a result of the expanding social, economic and biological influence of European humans on the "new" continent. They are the byproduct of our own vicious colonial invasion begun over five centuries ago.

Within such a context, the more recent spread of purple loosestrife (along the disturbed soil regimes of canals and superhighways in North America) can be understood as stemming from an expanding industrial economy rather than as the result of a "viscous invader" posing a threat to wetland plant communities. Furthermore, the extraordinary historical loss of wetlands throughout North America must also be attributed to the expanding engine of human enterprise rather than the introduction of purple loosestrife, though I have not seen any papers authored by weed scientists that discuss the spread of invasive commercial developments throughout the remaining wetlands of North America.

Given this new perspective, the purple loosestrife control effort must be seen in a new light: it acts not to save nature but to legitimize the commodity interests of the dominant culture by simultaneously mitigating its worst effects and by ensuring a continued "bountiful harvest." The scientific

manager's role in this "world assault" on "earth" is that of the "sane assassin," an emotionless defender of center values against the depredations of the uncontrollable wildness of nature. The scientific manager is the emissary of "center world" who operates at the margin between nature and society, methodically providing the "cleanest" methods to kill insects, coyotes, wolves, weeds and other varmints that pollute the social order of the productive farm, hunting area, town or city. Purple loosestrife control is therefore not an act of preserving wetlands in the face of an alien invader. It is, rather, an assertion of power by human civilization over nature and, as such, it reinforces the images of perfection that form the collective human construction of a socialized and, sadly, a sanitized natural world.

notes

1. Indeed, the literature published on purple loosestrife since 1987 has largely dealt with the control of the plant rather than ecological interactions with native flora and fauna. Of the literature surveyed, a total of 15 papers used the Thompson et al. paper as a proof, or a partial proof that purple loosestrife degrades wetland areas as wildlife habitat (see: Keddy 1988, Hight and Drea 1991, Thompson 1991, DeClerke-Floate 1992, Blosssey 1993, Benckhuysen and Simser 1993, Haber, Keddy, White 1993, Malecki et al. 1993, Manguin et al. 1993, Becker and Welling 1993, Keddy 1994, Skinner et al. 1994, Blosssey and Schroeder 1995, Hight et al. 1995). It should be noted that several other papers listed in the bibliography did not make reference to the ecological impacts of purple loosestrife. The urgency these papers outline for various types of control programs suggests the authors accept the apparent negative ecological impact of purple loosestrife as a given fact.
2. In fact, there are two photographs on the cover, one showing a green "pristine" wetland, and the second showing the same wetland several years later as a purple infested "wasteland." However, the first photograph of the supposedly "healthy" wetland was taken in June, well before the flowering season, while the second photograph was taken in August, during the height of the loosestrife flowering season, thus making the two photographs extremely difficult to compare (see Anderson 1995).
3. For example, Thompson provides little conclusive evidence supporting a decrease in the biomass of other plant species as a response to purple loosestrife invasions, and Anderson's own research found no definitive correlation between the density or percent cover of loosestrife and the floral species richness of the given area. Furthermore, the assertion that loosestrife is not utilized by North American fauna also deserves some consideration. Batra (et al. 1986) has recorded the use of purple loosestrife as a source of nectar and pollen by 14 separate species of insects. White-tailed deer (Rawinski 1982 cited in Anderson 1995), muskrat (actually cited in Thompson et al. 1987), rabbits (Anderson 1995) and meadow voles (Kiviat 1989 cited in Anderson 1995) have shown evidence of grazing on the shoots of the plant. Anderson (1995) has observed American coots, pied-billed grebes, black-crowned night-herons, American goldfinches and gray catbirds nesting in stands of loosestrife. Red-winged blackbirds are known to nest preferentially in stands of loosestrife (Keddy 1992).
4. I do not mean to imply here that the perceptual world view of nonhuman life is irrelevant. It is often forgotten that humans do not have a monopoly on the social existence over forms of life.
5. I am conscious of the fact that Douglas and Wildavsky use their analysis of pollution to question the environmental movement's construction of ecological collapse models. By using this material to support my arguments concerning purple loosestrife, I am not "turning coat" on the movement, but am suggesting the need to develop more compelling arguments than those that are purely technical in their orientation.
6. As we have seen from the earlier Biblical example, both the deep antipathies and metaphorical associations run to the roots of our origins as agriculturalists.
7. Thompson discusses the bog turtle and the canvasback.
8. Indeed, without the invasive species rallying cry, the cattail managers are somewhat more forthright in their motives, one scientist declaring that "chemically created openings... are an acceptable management tool to create wetland openings that enhance waterfowl use and production" (Solberg and Higgins 1993 Abstract).
9. A similar example came to the fore during the winter of 1995/96, as the Ontario Federation of Anglers and Hunters ran a campaign to "save Ontario's deer" from the particularly harsh seasonal weather conditions. Donations were solicited so that feed could be distributed throughout the forests of the province, presumably so that enough deer would be available to be shot for recreation the following autumn. Again, it seems that "saving" the deer is not the issue so much as maintaining the productive supply. Paradoxically, in a fax addressed to a recent forum I attended on the ethics of deer culls to protect vegetation in provincial parks, OFAH suggested that southern Ontario was overpopulated with deer, and hunters should be allowed access to protected areas to rectify this pressing problem. Furthermore, it seems that the ducks that need to be saved from purple loosestrife are also threatened by the hunters whose representative organizations are supporting eradication campaigns. Hunters unable to identify waterfowl in the field may be shooting rare species, and have even been known to shoot hawks, herons, grebes and shorebirds. See Barry Trent McKay, "Bag Limits a Joke in Hunters Can't Identify Waterfowl," in *The Toronto Star* Oct. 20, E4.
10. Andrew Light and Eric S. Higgs have written a fascinating paper on the relationship between restoration projects and capitalist commodification. Their particular focus is the corporatization of restored images of nature to act as an apology for continued exploitation of nature and as a pristine image to sell products. See "The Politics of Ecological Restoration," *Environmental Ethics* 18, 227-247.
11. See Thompson (1987) for an early expansion history along canals, and Wilcox (1994) for an account of superhighways as a major agent of spread into the western United States.
12. I am borrowing here from Dennis Lee (1977) the concept of a continual struggle between world (civilization) and earth (nature). Lee discusses Michael Ondaatje's poetic representation of this battle in the person of the law enforcement officer Pat Garrett, a "sane assassin" who controls the wild unpredictability of the outlaw Billy the Kid. I am suggesting that the scientist is modern society's ontological law enforcement agent.

references

- Anderson, Mark G. (1995) "Interactions Between *Lythrum salicaria* and Native Organisms: A Critical Review," in *Environmental Management*. 19(2): 225-231.
- Batra, S.W., T.D. Schroeder, P.E. Boldt and W. Mendl. (1986) "Insects Associated With Purple Loosestrife (*Lythrum salicaria*) in Europe," in *Proceedings of the Entomological Society of Washington*. 88: 748-759.
- Becker, Roger L., and Charles H. Welling. (1993) "Reduction of Purple Loosestrife Establishment in Minnesota Wetlands," in *Wildlife Society Bulletin*. 21(1): 56-64.
- Benckhuysen, J.A., and W.L. Simser. (1993) "Efficacy of Tryclopyr Amine in Controlling Purple Loosestrife," in *The Garden's Bulletin*. 12(2): 23-38.
- Blossey, B. (1993) "Herbivory Below Ground and Biological Weed Control: Life History of a Root-Boring Weevil on Purple Loosestrife," in *Oecologia*. 94: 380-387.
- Blossey, B., Stephen D. Hight, Richard A. Malecki, Dieter Schroeder. (1994) "Host Specificity and Environmental Impact of the Weevil *Hyllobius transversovittatus*, a Biological Control Agent of Purple Loosestrife," in *Weed Science*. 42: 128-133.
- Blossey, B. and Dieter Schroeder. (1995) "Host Specificity of Three Potential Biological Weed Control Agents Attacking Flowers and Seeds of *Lythrum Salicaria*," in *Biological Control*. 5: 47-53.
- Crosby, Alfred. (1986) *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge: Cambridge University Press.
- Delfosse, E.S. (1984) *Proceedings of the VI International Symposium on Biological Control of Weeds*. Agriculture Canada, Ottawa.
- DeClerck-Floate, Rosemarie. (1992) *The Desirability of Using Biocontrol Against Purple Loosestrife in Canada*. Agriculture Canada, Lethbridge.
- Douglas, Mary. (1966) *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*. London: Routledge.
- Douglas, Mary and Wildavsky, Aaron. (1982) *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers*. Berkeley: University of California Press.
- Ducks Unlimited. *Purple Loosestrife*. An information pamphlet published by Ducks Unlimited Canada.
- Evernden, Neil (1992) *The Social Creation of Nature*. Baltimore: Johns Hopkins University Press.
- Goethe, Johanne Wolfgang von. (1988) *Scientific Studies*. Douglas Miller, ed. New York: Suhrkamp.
- Haber, Eric, Cathy Keddy, David J. White. (1993) *Invasive Plants of Natural Habitats in Canada*. Canadian Wildlife Service, Environment Canada.
- Haraway, Donna. (1988) "Primitology is Politics by Other Means," in Ruth Bleier, ed., *Feminist Approaches to Science*. New York: Pergamon Press.
- Haraway, Donna. (1992) "The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others," in Laurence Grossberg, Cary Nelson, and Paula Treichler, eds. (1992) *Cultural Studies*. New York: Routledge.
- Higgs, Eric S. and Andrew Light. (1996) "The Politics of Ecological Restoration," in *Environmental Ethics*. 18: 227-247.
- Hight, Stephen D., Bernd Blossey, John Laing, Rosemarie DeClerck-Floate. (1995) "Establishment of Insect Biological Control Agents From Europe Against *Lythrum salicaria* in North America," in *Environmental Entomology*. 24(4): 967-977.
- Keddy, Cathy. (1988) "The Urgency for Purple Loosestrife Management in Ontario," in Michael Bordecki and Nancy Patterson, eds., *Wetlands: Inertia or Momentum*. Federation of Ontario Naturalists, Don Mills.
- Keddy, Cathy. (1992) *A Universal Manual For Purple Loosestrife Control*. Ontario Federation of Anglers and Hunters, Peterborough.
- Kormos, Peter. (1991) *Report on Exotic Species in Ontario*. Standing Committee on Resource Development, Ontario Legislature.
- Lee, Dennis. (1977) *Savage Fields: An Essay in Literature and Cosmology*. Toronto: Anansi.
- Malecki, R.A., and T.J. Rawinski. (1985) "New Methods For Controlling Purple Loosestrife," in *New York Fish and Game Journal*. 32(1): 81-87.
- Malecki, R.A., Bernd Blossey, Stephen D. Hight, Dieter Schroeder, Loke T. Kok, and Jack R. Coulson. (1993) "Biological Control of Purple Loosestrife," in *Bioscience*. 43(10): 680-684.
- Manguin, Sylvie, Richard White, Bernd Blossey and Stephen D. Hight. (1993) "Genetics, Taxonomy, and Ecology of Certain Species of *Galerucella*," in *Annals of the Entomological Society of America*. 86(4): 398-410.
- McKay, Barry Trent. (1996) "Bag Limits and Joke in Hunters Can't Identify Waterfowl," in *The Toronto Star*. Oct. 20: E4.
- Skinner, Luke C., Ellen L. Fuge and William J. Rendall. (1994) *Minnesota's Purple Loosestrife Program: History, Findings and Management Recommendations*. Minnesota Department of Natural Resources, St. Paul.
- Solberg, K.L., and K.F. Higgins. (1993) "Effects of Glyphosate Herbicide on Cattails, Invertebrates, and Waterfowl in South Dakota Wetlands," in *Wildlife Society Bulletin*. 21(3): 299-307.
- Thompson, Daniel Q. (1991) "History of Purple Loosestrife Biological Control Efforts," in *Natural Areas Journal*. 11(3): 148-150.
- Thompson, Daniel Q., R.L. Stuckey and E.B. Thompson. (1987) "Spread, Impact and Control of Purple Loosestrife in North American Wetlands," in *U.S. Fish and Wildlife Research*. 2. U.S. Fish and Wildlife Service.
- Wilcox, Douglas A. (1994) "Migration and Control of Purple Loosestrife (*Lythrum salicaria*) Along Highway Corridors," in *Environmental Management*. 13(3): 365-370.
- Worster, Donald. (1994) *Nature's Economy: A History of Ecological Ideas*. Cambridge: Cambridge University Press.

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the thorn

it seems like sacrilege

for a man

with hands gnarled like a jack pine,

cracked and knotty,

to be holding the garden sylphs.

but he is just a pious man

with bulbous knees

paying homage

to his companions:

plucking out marauders

with suspicious tendrils,

murmuring to nascent buds,

singing to the blooms,

explaining a move

to an interloping slug,

a man nursing

his gardens

by moods and myths.

(once I even saw him

tape a wisp of bark

to the bald spot

on a birch tree).

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