

REWEAVING NARRATIVES ABOUT HUMANS AND INVASIVE SPECIES

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WE NEED A NEW STORY about invasive species. We will have to learn to live with them, for many are here to stay [Soulé 1990]. The trends suggest that they will continue to increase in numbers and that we will at most be able to restrict the spread of the more problematic ones. If the only model we have is one that opposes these changes, we will be limited in our potential responses and in our capacity to accept when we need to do so. We will be constantly frustrated by the way the world is. I am not suggesting that we should take a laissez-faire attitude towards these species, but instead that we need to reconsider how we relate to them in order to wend a path between the extremes of apathy and antipathy. We will not accept them all the time, but perhaps we need to accept them more often. A new narrative based on new metaphors can guide us in deciding when and where. It will also assist our children in their encounter with a world that contains many non-native species. If we teach them that non-native species are bad, will we effectively teach them that the natural world is bad, or even that humans are bad and

guilty? What would be the consequences of this narrative?

Here, I will offer a number of ways of characterizing these species to promote the challenging, but essential task of reframing our image of them [Keulartz and van der Weele 2008]. D.A. Schön argued:

The essential difficulties in social policy have more to do with problem setting than with problem solving, more to do with ways in which we frame the purposes to be achieved than with the selection of optimal means for achieving them [1979: 255].

This applies to invasive species in that we limit ourselves by thinking of them the way that we do. The phrase activates a particular frame of thought, one that has begun to seem self-evident and inexorable because it has been repeated so often. This is all the more reason to interrogate it, particularly since its repetition is conducive to an implicit belief that it is the right view.

I will limit use of the phrase “invasive species,” for it only reinforces our tendency to think of this phenomenon in a certain way. Instead, I will use the acronym “IS.” While its referent is unlikely to drop from our lexicon anytime soon, we will obtain perspective through exploration of alternative possibilities. To avoid the prevailing connotation that “invasive species are our enemies,” I cannot just promote the alternative that “invasive species are our friends.” Notice that they are still invasive species, which still activates our associations about invaders, even if unconsciously – which is where cognitive scientists tell us that most cognition happens anyway [Lakoff and Johnson 1999].

This paper assumes that there is no single nature, but only a “diversity of contested natures” [Macnaughten and Urry 1998]. This does not deny that there is a nature “out there.” Instead, it assumes that we cannot avoid human interpretation: the same landscape, with or without IS, can be perceived in markedly different ways. In his book *Infinite Nature*, for example, R.B. Hull [2006] reviews how nature can be seen primarily as anthropogenic, evolving, ecological, (in)finite, economic, healthy, fair, spiritual, human, rightful, aesthetic, or moral. These alternative views of nature remind us that questions about accepting or rejecting IS must take place within the context of social decision-making about the type of world we want to live in. Without linking scientific knowledge about IS with an understanding of the diverse social values at stake, management is unlikely to be successful [Woods and Moriarty 2001; Bardsley and Edwards-Jones 2006; Stokes *et al.* 2006; Evans *et al.* 2008]. This paper seeks to open the “problem space” about IS in order to weave richer narratives about their place in the world.

The following ways of looking are sketches rather than fully-developed alternatives. They are neither mutually exclusive nor applicable to every IS, but at least a few of them probably apply to a given IS (even though most of the examples are North American ones with which I am most familiar). They are meant to challenge some of our foundational assumptions about these species to promote creative approaches to them rather than to provide a final solution. They are potential components of a new narrative and way of relating to IS. Some of them may be familiar.

Invaders

This is an obvious place to begin since invasion is now both conceptually and semantically at the root of how we think about this phenomenon. Why might this be? Some claim that C.S. Elton [1958] used militaristic metaphors to draw attention to biological invasion as a reflection of his worries about invasion of England by the Nazis [Davis *et al.* 2001]. This accords with an historian’s view:

The whole field is influenced by its origin in the concept of invasion from political geography [Moore 2006: 106].

Whether or not this is the case, we continue to refer to these species as “invasive species.” The notion of invasion works here because of the way we exist in the world and an associated cognitive structure known as the container image schema [Larson 2008 and 2010]. This schema allows us to invoke a boundary that is crossed from an “outside” into an “inside.” With IS, we project this embodied boundary outward to encompass biogeographic regions and even nations. It has been argued that part of the reason humans defend nations so strongly is that we conceptualize them as our own body. Similarly, some of our concerns about IS may derive from related fears about the invasion of our body by disease and of our nation by invading peoples.

While the invasion narrative seems like a self-evident way to describe IS, this intimates that it is overly entrenched, too unexamined. There are always alternatives. These species are not really invaders, as they are not intentionally invading and we have often introduced them ourselves unlike diseases or immigrants.

Furthermore, the boundaries that we perceive are shifting in the sense that biogeographic boundaries have never been stable. Finally, we are concerned about these species out of a sense that resources and space are limited, just as we do not want foreign invaders to ransack us. But what if ecosystems are not as “full” as we might assume? It is challenging to think outside the box of invasive species, yet here I wish to question that box and open up creative approaches.

After framing this phenomenon as one of invasion, which derives from entangled biological, cultural and linguistic sources, we perceive these invaders as enemies and it becomes somewhat natural to be “at war” with them [Larson 2008]. This in part reflects the prevalence of militarism in contemporary culture, as G.A. Fine and L. Christoforides [1991] demonstrate for the war against the “English Sparrow.” Although it is certainly sometimes appropriate to eradicate or remove IS, a militaristic approach in general is problematic because (1) it leads to an inaccurate perception of them; (2) it contributes to social misunderstanding, charges of xenophobia, and loss of scientific credibility; and (3) it reinforces militaristic thought that is counterproductive for conservation [Larson 2005]. Together, the concept of invasion and the approach of militarism form a compelling and consistent narrative, one that originates in how we conceptualize these species in the first place.

We also need to continuously ask whether how we regard IS leads to misinterpretation, which is a risk of seeing them predominantly in one way. J.E. Houlihan and C.S. Findlay [2004], for example, surveyed 58 Ontario wetlands and found that exotic (including

purple loosestrife) and native species were equally likely to negatively affect native plant communities. If we are focused on the exotic/native distinction, however, we might overlook the possibility that “the key to conservation of inland wetland biodiversity is to discourage the spread of community dominants, regardless of geographical origin.” [Ibid.: 1132] Other authors have also shown that native and non-native species may be more similar than we often think [Thomsen *et al.* 2006; Meiners 2007]. Elsewhere, A. Ricciardi and J. Cohen [2007] argue that the term “invasion” is misleading because it conflates “spread” with “impact,” when preliminary data suggests that species that spread are no more likely to have a high impact than those that don’t.

While some will counter that the joint invasion-militarism frame aptly draws public attention to the problem of IS [Simberloff 2006], there are two assumptions here. First, that we need to dupe people into thinking there is a problem rather than having open dialogue about it. Second, that such language will effect change. By questioning these assumptions, we seek more inclusive and productive frames with the objective of a long-term, sustainable relation between humans and the planet [Gobster 2005; Larson 2005]. The following ways of looking aim to break the stranglehold of one particular way of relating: IS are bad, they are an enemy to be destroyed, we are at war against them.

Opportunists

IS piggy-back on human beings and our habits in order to arrive in new locations. This is

comparable to phoresy, the process by which animals move around in association with one another. A classic example is provided by the phoretic mites that move around on the bodies of various beetles and which depend on them for their dispersal. IS similarly rely on us to move them around [Bright 1999]. Though they may move on their own without our assistance, we often speed up this process. We travel the seas, emptying bilge water. We bring home souvenirs, on purpose or unknowingly. We order seeds from foreign lands to grow plants that we desire. Even conservation biologists insist on traveling the world. In each case we increase the probability of introducing organisms that would not have made it here otherwise. Like the beetles that transmit phoretic mites, we are essential to their dispersal and there is no way to imagine these species without us. Otherwise, they would be “natural;” it is only by excluding ourselves and our intentions from nature that they are not.

We not only transport these species, but also provide them with homes. Once they arrive, they typically do well in places that we have created for them, particularly disturbed habitats. We can choose to malign their resourcefulness or to appreciate it. C. Jenkins and S. Pimm [2003] concluded that about 23% of the world’s ice-free land area is disturbed, forming a “global weed patch” favorable for IS. We have changed global climate and nitrogen deposition patterns and created eutrophic wetlands. We have certainly contributed to the capacity for IS to “survive and thrive” in new places. They are symbionts of ours. They are a consequence of how we live on the earth.

An emerging body of literature confirms that IS may not be so much a cause as a consequence. In the garry oak (*Quercus garryana*) savanna of British Columbia, for example, A.S. MacDougall and R. Turkington [2005] attempted to tease apart whether IS “drive” ecological change or, rather, just respond (as “passengers”) to prior and ongoing ecological change [Didham *et al.* 2005]. While the presence of IS has often been associated with the decline of native species, implying that they are the primary cause, an alternative possibility is that human disturbance is at least a coequal causal agent. A.S. MacDougall and R. Turkington [2005] found that the passenger model better explains the success of exotic species since removal of two dominant exotic grasses, Kentucky bluegrass (*Poa pratensis*) and orchard grass (*Dactylis glomerata*), did not generally lead to recovery of native species, probably because the latter were recruitment-limited. In northern Wisconsin and Michigan, S. Wiegmann and D. Waller [2006] reached a similar conclusion. They resurveyed 62 upland forests that had been initially inventoried around 1950 and found that 21 “loser” species declined in frequency whereas 21 “winner” species increased. Perhaps surprisingly, only five of the winners were exotic species, whereas the remainder were common, native ones. The losers were mostly rare animal-dependent forbs that were sensitive to desiccation and disturbance, but overall they suggest that the “key driver” of their decline was grazing by white-tailed deer (*Odocoileus virginiana*). Studies such as these raise questions about whether IS are too often scapegoats;

they may be as much a result of landscape changes we have caused as the cause of such changes themselves [Larson 2007]. Perhaps IS even necessitate that we replace our emphasis on human versus non-human causality with a focus on human/non-human codependence.

Spawn

We could look at these opportunistic symbionts of ours neutrally, but if we wish to lament them we could consider them as our spawn rather than as invaders for which we have no responsibility. Their occurrence outside their historical distribution results from our actions, from the choices we have made as a species (and as individuals), and from our habits: our consumption, our travel, our never-ending search for greater efficiency, productivity and speed. It is in part because of these patterns that IS are out of control.

It is our actions that have created these species. In his history of weed control in the Canadian Prairies, C.L. Evans notes how the main legacy of agricultural bureaucracy and legislation was to “help preserve the ecologically unsound, weed-friendly style of farming that persists on the Prairies to this day. They did so by reinforcing the popular notion that weeds were the ‘enemy’; by diverting attention away from the fact that the true enemy was the extensive system of grain farming practiced by the farmers themselves.” [2002] Similar accounts have been told in the southern United States for both the rise of tamarisk (*Tamarix* spp.) in response to how we have changed the hydrological regime [Rodman 1993] and for the spread of fire ants because of the “bulldozer revolution” [Buhs 2002].

Some of our efforts at control merely intensify the problem or create additional ones, including errant biological control efforts, unintended consequences of pesticide spraying, and recolonization by non-native species after extermination of an IS [Smith *et al.* 2006]. We have created IS. They are our progeny. We would have to remove ourselves – the greatest IS of them all – to get rid of them.

Mirrors

It is too convenient to see IS as predominately a biological problem, as one of species moving around and causing harm, but our everyday actions are tied up in their spread as described above. Consequently, we may dislike IS because we observe something in their behavior that we dislike about our own. We observe them spreading, expanding, and going into the wrong places. In the process they reflect our own behavior: 1) in the United States of America, human population size and years of statehood account for 75% of the variation in non-native plant species richness among states, with the former being the best single predictor [Mckinney 2001]; 2) higher real estate values are correlated with more alien species [Taylor and Irwin 2004]; and 3) in nature reserves, IS presence increases with human visitation rates [Lonsdale 1999]. These results emphasize how interwoven we are with the spread of IS.

In his book, *Faces of the Enemy*, S. Keen observes:

In the image of the enemy we will find the mirror in which we may see our own faces most clearly [1987: 11].

We characterize IS as amoral in terms of numerous traits – aggressiveness and lack of control, in particular – that “represent forbidden sides of human nature” [Eser 1998] and that contrast with a more harmonious nature itself. B. Subramaniam [2001] demonstrates how our rhetoric about IS reflects that about foreign immigrants, including claims that they are “taking over everything” and “silently growing,” and that they have “uncontrollable fertility and reproduction.” Accordingly, J. Rodman concludes:

When we look at [...] tamarisk invasion, we look as if in a mirror and realize that restoring the balance must, in large part, come from within [1993: 152].

As a mirror for our actions, these species are also like the proverbial canary in the gold mine. They are alerting us to our effects on the planet.

There is yet another way in which IS serve as a mirror for ourselves. N. Evernden provides an interesting twist on being an IS when he observes:

It is not just the biotic community that is puzzled by the arrival of the exotic; so too is the creature itself. Figuratively speaking, just as the environment does not know how to cope with the new creature, neither does the exotic know what it ought to do [1993: 109].

Whether or not we ascribe too much personification to this view of organisms, he proposes that we might emphathize with this aspect of exotics because we are exotics too – our placelessness, our technologies, and our minds have set us adrift in the world. Non-indigenous species – especially IS – may

serve as a stark reminder of our lack of an existential niche.

Providers

Non-native species comprise most of the plants that humans grow for food. They are our lifeblood. Yet from the perspective of the land, they are just as harmful as IS. I think one of the great ironies of invasion biology is that as the settlers moved westward in North America, they despised wilderness and eradicated it and its denizens to replace it with non-native species to supply their food. As C.L. Evans observes:

Between 1800 and the 1860s [in Ontario], settlers waged a relentless war against forest species: plants out of place in the eyes of farmers [2002: 70].

We once killed off native species to make way for our introduced ones, yet now we revere wilderness and eradicate non-native species (especially invasive ones) to recover those earlier species.

It is intriguing to reflect on what this story tells us about our values. Why is it that we accept some non-native species but not others? We accept non-native plants that we cultivate, but not the weeds among them. We do not accept non-native plants that we introduce for particular reasons, including garlic mustard and purple loosestrife, once they escape. We accept native plants when they are in their place, but not non-native species that affect them. It appears that what bothers us is “nature out of place” [Milton 2000], nature that disrupts our plans, whether the gardens we maintain for food or the gardens in which

we try to conserve biodiversity. We support those species that continue to encourage our own invasive spread, producing more IS as we do. Just as history suggests that we cannot have crops without weeds, we may not be able to set landscapes apart without IS. So, by acknowledging the importance of tamed invaders to our lives, we gain yet another perspective on the fine line between non-native and native, invasive or not, and its dependence on our desires and preferences.

Hybrids

IS also represent hybrids of nature and culture [Latour 1993; Haila 2000]. While we tend to think in neat categories of natural entities versus human creations, IS contain inextricable elements of both. They are “natural” in that they are species like any other. They are “cultural” in that they have been brought somewhere new by humans, whether intentionally or not. While we might wish to classify a species at one end or the other of the nature-culture pole, both will ultimately be unsatisfactory. If we treat them as “natural,” perhaps by just ignoring them and letting them expand, we may have to contend with greater effects than we wish. If we treat them as merely “cultural,” wishing to control them, we will soon be faced with their “natural” abilities, their evolutionary capacities. As an example, consider the dramatic increase in forest cover in much of the northeastern United States and adjacent Canada over the past few decades. These forests have diverged from “presettlement” ones, however, not least because they are so “disturbed” that they now represent nature-culture hybrids – regardless

of the extent to which their species are native or not.

P. Robbins [2001] provides an informative case study of the hybridity of our landscapes. In Rajasthan, India, people formerly harvested food, medicines, and other products from local woodlands and incorporated fallow land into their agropastoral production. Over the past few decades, governmental policies have segregated these woodlands as wilderness reserves, in contrast with intensified use of fallow lands and the planting of non-native fast-growing trees (especially mesquite, *Prosopis juliflora*) to provide fuelwood plantations. That is, they have applied a bureaucratic classification scheme to the land that derives from a partitioning between what is “natural” and what is “social.” Unfortunately, this effort has backfired since the invasive mesquite has created a hybrid “quasiforest” that is a “nuisance to farmers, a crisis for locals, and a novel ecology that has proven impossible to control or quarantine.” [Ibid.: 639] It comprised most of the 50% increase in forest cover observed between 1986 and 1999. This growth is a complex consequence of the biological properties of mesquite (drought and browse resistance, nitrogen fixing ability, and allelopathy), its popularity among foresters, and the recent shift in disturbance regime caused by government policies. Robbins concludes:

The more we attempt to partition and measure the land in discrete modern packages, the more unexpected [...] crosses, mixes, and effects are evident [id.].

This may be the way the world is, with our boundaries being only transient fixes against the flux.

Tricksters

In the cultural traditions of many Native American tribes, the coyote is the trickster who disobeys normal rules of conduct and creates problems for human beings by upsetting their plans. Sometimes he playfully mocks the control that people seek, their attempt to figure everything out and to keep it in place. IS may play an analogous role for us as they serve as a reminder – even if we would prefer not to listen – that life is outside our control. We continue to seek control, however, even while IS (and many other features of the world) undermine it. As historian M. Fiege states:

Unwanted living things [...] could be counted among life's few certainties [1999: 77].

We may now perceive the spread of mesquite in Rajasthan in a different light, as a trickster that has disrupted our rationalized approach to landscapes. Or, as D. Ehrenfeld asserts with regard to North Americans' wish to rid their lawns and lives of European dandelions (*Taraxacum officinale*):

Dandelions are the supreme symbol of the failure of human control [1993: 100].

The trickster reminds us of our place in the cosmos. We live in an era of great faith in science and its rationalism, and we extend this faith to our approach to IS, thinking that some day, with sufficient border control, rapid detection, and efficient extermination, we can overcome this problem. And we can defend this faith, especially at times of success such as the “rapid response” to eradicate the alga *Caulerpa taxifolia* when it was detected in

California [Anderson 2005]. Nonetheless, this view runs the risk of becoming soteriological, a source of ultimate salvation that is based on the success of scientific prediction and control. However, it lacks the exploration of meaning inherent in traditional religious soteriology. It also lacks in humility.

Matrices

In many cases, IS have established themselves to such an extent that they have become components of a habitat matrix that we have no choice but to accept. Sometimes this matrix may appear dysfunctional, but this often remains to be seen. As an example, non-indigenous tree species play a critical role in the regeneration of forested landscapes on Puerto Rico, beginning as monocultures but later contributing to the colonization of native tree species and giving rise to unique mixo-communities after 60-80 years [Lugo 2004]. Similarly, D. Wilkinson [2004] describes how “terra-forming” by the introduction of diverse plant species has transformed Green Mountain on Ascension Island in the south Atlantic Ocean. In 1836, Darwin complained that it was an “island entirely devoid of trees,” whereas now there is a cloud forest. Although it is composed almost entirely of non-native species, Wilkinson argues that it provides an example of how humans can create complex systems simply by removing dispersal barriers, potentially even overcoming a lack of coevolutionary history. Systems such as this may not be beneficial for endemic species, but they could serve other roles. Furthermore, if you try to remove dominant IS such as these, new ones may simply arrive to replace

them [Zavaleta *et al.* 2001]. For related reasons, the matrix formed by IS often plays a critical role in restoration projects [Ewel and Putz 2004].

Occasionally, habitat dominated by an IS supports rare species that we care about. In California, the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) nests in tamarisk, the rapidly-declining tricolored blackbird (*Agelaius tricolor*) nests preferentially in Himalayan blackberry (*Rubus armeniacus*), and monarch butterflies (*Danaus plexippus*) over-winter in Eucalyptus (*Eucalyptus* sp.) groves. A.S. MacDougall and R. Turkington [2005] suggest that dominant exotic grasses help maintain the open structure of garry oak savanna by preventing succession to exotic woodland in the absence of fire. These and other examples demonstrate how IS have already become a component of functioning biological systems – notwithstanding that in many cases they are radically changing their form.

Transients

Invasion happens. Species come and go, they always have, and they always will [Brown and Sax 2004; Vermeij 2005]. We will never be able to capture them and thereby trap communities in a particular state. Ash trees (*Fraxinus* spp.) in southern Ontario are currently being eliminated by emerald ash borer (*Agrilus planipennis*), and there is no doubt that this has tremendous aesthetic, ecological, and economic implications [Poland and McCullough 2006]. Nonetheless, any argument in terms of the loss of “native” forest is

weak, since the forest has already lost American chestnut (*Castanea dentata*) and American elm trees (*Ulmus americana*), the former dominants, to earlier “waves of invaders.” IS remind us that life is characterized by change, and that our concerns derive from trying to keep things as we know them.

IS are also transient in terms of our changing perceptions of them, which provides another impetus to stretch our conceptual flexibility. For example, kudzu (*Pueraria montana* var. *lobata*) was originally promoted as a beneficial “miracle vine” in the southeastern United States [Alderman 2004]. North American black cherry trees (*Prunus serotina*) were once planted in Europe as a timber tree and later seen as a weedy pest, but now they are to a large extent accepted as part of the flora [Starfinger *et al.* 2003]. We know we will have to accept some of these species, but we need to bring this realization even to our interactions with those species that we really do not want.

Founts

We think of IS as forces of death and destruction, yet we could alternatively think of them as long-term forces of life and creation. By introducing species to new locations, we are creating new evolutionary possibilities. Of course, introduced species will not always evolve, especially on short time scales, but one would expect they will eventually. They will encounter new, evolving competitors, herbivores and predators as well as slightly different climatic regimes. They will gradually develop new interactions with other

species, in some cases causing reciprocal adaptive change in the preexisting flora and fauna [Strauss *et al.* 2006a]. Over time, they may evolve to be distinct from their place of origin, perhaps even becoming new species. For example, D. Schwarz *et al.* [2005] documented hybrid speciation of a fruit fly, the *Lonicera* fly (*Rhagoletis* sp.), in a host shift to invasive honeysuckle (*Lonicera* sp.) in the northeastern United States. While we may be a greater factor in the origin of such species, they can in the long-run be seen in this light as a process of creation rather than destruction. I agree with P. Cassey *et al.* that “The fact that we can look forward to ecological systems recovering from these assaults in the next ten million years or so is not [...] a great consolation” [2005: 479], yet we nonetheless must acknowledge that many of these changes are happening whether we like them or not. We cannot recover the past.

We may also view IS as a fount of future communities more broadly. R. Hobbs *et al.* [2006] review the character of “novel ecosystems” around the world, including those mentioned in the “matrices section” above. Many of them contain IS at the expense of endemics, which prompted one reviewer of their paper to declare:

It is hard to make lemonade out of these lemons [2006: 5].

They countered:

We are heading towards a situation where there are more lemons than lemonade, and we need to recognize this and determine what to do with the lemons [*id.*: 5].

These ecosystems may not serve all of our needs or requirements, but that may not be the only reason for their existence.

IS may also help to create new habitats that are more species-rich by certain definitions and at certain scales. At a global scale, the loss of some endemics to IS is more than offset by gains in local species richness due to non-native species [Sax and Gaines 2003]. Nonetheless, it is crucial to recognize that we are losing local endemic species. Claims that IS increase diversity thus prioritize the richness component of diversity over evenness, and there may also be a lag before the full effect of these species are revealed. Nonetheless, diversity may also increase in a more subtle sense: S.Y. Strauss *et al.* [2006b], for example, demonstrate that invasive grass species in California are less closely related (phylogenetically) to native grass species than are non-invasive non-native ones. Though this perspective may be optimistic and oriented to long time scales, IS may contribute to novelty at all levels of biological organization.

Teachers

IS are teachers in the sense that they encourage us to recognize some of our deepest assumptions about the natural world and our relationship to it. This process may be an emotional and even painful experience, so we may learn more by paying attention to our response to IS than from other humans who share our assumptions about nature. If nature is supposed to behave, we might be frustrated at the economic costs of IS and how they force us to reckon with our ideals for continued growth. If nature is supposed to obey, we

might be upset that we cannot control many IS. If nature is supposed to be a particular kind of functioning system to support us, we might be afraid that IS will cause the system to fail. If nature is supposed to be diverse and heterogeneous, we might be terrified at how IS might contribute to the continued loss of endemic species and perhaps to a more homogeneous landscape. Or, if society is supposed to listen to scientists, we might be angry at “the system” or “the naïve public” who will not listen to the image of IS that we paint.

I have seldom heard discussion of the emotional undertones of invasion biology. For the most part, we merely label these species, in one way or another, as “bad.” But this substitutes for a range of emotions we may experience: anger and loathing because of how they are changing “nature,” fear of their potential effects, frustration that we can only do so much about it, sorrow for our losses, regret for the choices made by previous individuals (and even by our species), and maybe even guilt that we too are an IS. To avoid feeling the weight of this and related issues, we may choose apathy or denial, or retrench to objective problem-solving. Instead, we may need to acknowledge and discuss these responses. In this way, IS can help us grow in humanity and in wisdom.

Concluding Thoughts

Having considered these diverse ways of looking at IS, we may now have a better sense of why these species are not solely “invaders.” While some people will still harbor a fairly negative perspective of their character, this exercise will hopefully encourage greater

openness to alternatives and thereby assist us in articulating our values and in restoring our landscapes together. My intent has not been to condone IS, but to emphasize that our conceptualization of them needs to be more complex than one based in dualities of good/bad, insider/outsider, natural/unnatural. Many of us will still feel antipathy towards them, either because of their economic impact or their effects on familiar species and communities, yet we must communicate our concerns to those who have different perspectives on the issue. Furthermore, these alternatives highlight that different IS require different responses that need to be evaluated in context.

“Invasive species” has negative connotations, so most of us quickly skip to “How do we get rid of them?” “IS,” instead, allowed a brief pause. When I used this shorthand in the paper, did you have a tendency to translate it into “invasive species” rather than to accept what IS? The acronym conveniently reminds us that we may relate to IS as what is. We may thus reconsider the “is-ness” of IS. By considering IS in the context of what is, we may be less driven by blame and regret about how we have reached this point, based on past actions, or by fears about the shape of the future. “Is” not only leads to greater acceptance of our place in the cosmos, but also to a better source of action. “To be” is one of the most basic and powerful verbs. We normally take it for granted, yet it is a pointer to the question “Why is there something rather than nothing?,” an ontological mystery we have not answered [Heidegger 1962; Evernden 1993]. And by asking this question, we must confront whether we are as in control of what is – or of IS – as we might think.

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Abstract

Brendon M.H. Larson, *Reweaving Narratives about Humans and Invasive Species*

Invasive species have become a key theme in environmental science over the past several decades, with our usual conception of them being quite oppositional. Since many of them are here to stay, however, we require a more flexible and evolving conception that can respond to diverse stakeholder perspectives and values. It must also highlight the role of humans in their creation and spread. Here, I present a variety of ways of looking at these species in the hope that they will contribute to more rich discussion about how we might better weave together the presence of humans and invasive species on hybrid landscapes of the future.

Keywords

framing, invasion biology, nature-culture dichotomy, stakeholder values

Résumé

Brendon M.H. Larson, *Comment entretenir les récits sur les humains et sur les espèces invasives*

Au cours des dernières décennies, les espèces invasives sont devenues un thème majeur des sciences environnementales. En général, elles sont perçues de façon négative mais, comme beaucoup d'entre elles sont appelées à durer, nous nous devons d'adopter à leur égard une attitude plus souple, qui tienne compte des perspectives et des valeurs des différentes parties en présence. Aussi devons-nous mettre en évidence le rôle que joue l'être humain dans leur apparition et leur diffusion. Nous présentons ici diverses manières d'appréhender ces espèces dans l'espoir d'enrichir la discussion portant sur l'amélioration de la coexistence entre les humains et les espèces invasives dans les paysages hybrides de demain.

Mots clés

mise en contexte, biologie de l'invasion, dichotomie nature-culture, valeurs des acteurs en présence