Environment and Planning D: Society and Space 1996, volume 14, pages 683-708

Nature and the reproduction of endangered space: the spotted owl in the Pacific Northwest and southern California

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Received 18 April 1995

Abstract. Recent efforts to protect biodiversity in the United States often reproduce the literal and figurative divisions of space that have originally endangered target species. Nature as redefined by these efforts is as much a social construction as it is some biophysical entity under siege by humans. We focus on the categorical and spatial distinctions between landscapes prioritized for protection and landscapes given less priority or ignored altogether. These distinctions, we wish to demonstrate, reflect pragmatic considerations of habitat quality and political expediency, but they also are enmeshed in dualist nature-culture ideologies that serve to legitimate and ultimately to reproduce the different practices that occur on these landscapes. We focus on protection of spotted owl habitat, one of the most important cases of biodiversity conservation in the United States since the passage of the Endangered Species Act. We consider recent spotted owl protection efforts in the Pacific Northwest and southern California. In the Pacific Northwest, spotted owl protection plans on public forests have been cited as justification for easing habitat protection on private lands, in spite of the major historical biodiversity role of these forestlands. In California, spotted owl policy deliberations for the urbanized forests of southern California have lagged far behind those in the Sierra Nevada, even though owl populations have declined faster in southern California than anywhere else in the state. These cases are indicative of a nature epistemologically understood and ontologically constructed as separate from culture, of what Latour would call an act of purification set up against the undeniably hybrid character of nature-cultures in late modernity. It is precisely this recognition of nature-culture intertwining, however, that will prove central to the creation of sustaining habitats for nonhuman life.

> "We have divided our country in two, between the kingdom of wilderness, which rules about eight percent of America's land, and the kingdom of the market, which rules the rest."
>
> Michael Pollan *Second Nature: A Gardener's Education* (1991, page 189)

Introduction

Nature as a social construct

Our intent in this paper is to examine how nature is being literally and figuratively constructed in the context of the nationally significant biodiversity-conservation efforts taking place in the Far West of the USA. These efforts are largely built on a crude realist premise that nature is some biophysical entity under siege by humans. Yet the threads of nature and culture are somewhat more entangled than many conservationists are willing to admit; as Raymond Williams observed, "The idea of nature contains, though often unnoticed, an extraordinary amount of human history" (1980, page 67).

In the last decade scholars from geography and other fields have explored the notion of nature as a social construct (Bennett and Chaloupka, 1993; Burgess, 1990; Cosgrove, 1984; Cronon, 1995; Demeritt, 1994; Evernden, 1993; FitzSimmons, 1989; Harrison and Burgess, 1994; Lynch, 1993; Milton, 1993; Oeschlaeger, 1991;

Olwig, 1984; Simmons, 1993; Smith, 1990). Throughout this literature, emphasis has generally been placed on a postempiricist epistemology, on nature as more than a set of plainly evident facts. This position has become so diffuse in contemporary critical inquiry into questions of nature and environment that the epistemological gap between the literature of social constructivism and that of conservationism appears impossible to bridge.

Without further development the postempiricist position of social constructivism becomes problematic in its flirtation with epistemological relativism as well as in its ontological silence. In its strong (and patently self-contradictory) form, relativism asserts that all truth is a matter of context, and that context is sufficiently heterogeneous to mitigate against any possibility of intersubjectively approved truth claims (Krausz, 1989; Margolis, 1986). Though not always explicitly addressed, epistemological relativism is operationally denied in part, or at least cordoned off to less troublesome territory, by virtually all social theoretical accounts (save perhaps those advancing nihilist platforms). Yet the social construction of nature literature is rarely clear in this regard.

An epistemological position that is a refinement of the social construction of nature argument is Katherine Hayles's (1995) constrained constructivism. Hayles accepts social constructivism, but argues that constructivism occurs within a bounded set of possibilities, where the bounds are comprised of biophysical constraints:

> "No matter how gravity is conceived, no viable model could predict that when someone steps off a cliff on earth, she will remain spontaneously suspended in midair. Although the constraints that lead to this result are interpreted differently in different paradigms, they operate universally to eliminate certain configurations from the realm of possible answers" (page 52).

Hayles's position provides a means to consider biophysical processes as actors in shaping knowledges of nature, and in responding to schemes of human practice based on these knowledges. Nonhuman species, for example, cannot adapt to all biodiversity-management schemes with equal success-though any judgment of success is also mediated through particular knowledges, which may highlight or obscure the status of certain species. Biological science thus plays the paradoxical role in biodiversity conservation of interpreting the realities of threatened species and their habitats via an epistemological language of thoroughly human origin.

The social construction of nature is more than an epistemological project, of course. Differentiated human forces have transformed the earth (Turner et ai, 1990) with biophysical impacts that are increasingly becoming a focus of concern, leading to widespread conservation efforts. Yet again, these impacts are not understood outside of socially constructed knowledges of nature. The ontological (reality-transforming) and epistemological (knowledge-creating) dimensions of the social construction of nature are linked in complex ways.

Bruno Latour (1993) weaves together these dimensions of the social construction of nature through his position that the mixing of the human and the nonhuman in reality-a process he terms 'translation'-has resulted not merely in altered 'natures' but in nature - culture hybrids, joint biophysical- human networks. Latour cites ozone depletion as an example; this is typically considered a biophysical phenomenon of anthropogenic origin. His account, however, of the discourse surrounding ozone depletion suggests that the ontological elements of culture and nature are more inalienably interwoven:

> "On page four of my daily newspaper, I learn that the measurements taken above the Antarctic are not good this year: the hole in the ozone layer is growing ominously larger. Reading on, I turn from upper-atmosphere chemists to Chief

> Executive Officers of Atochem and Monsanto, companies that are modifying their assembly lines in order to replace the innocent chlorofluorocarbons, accused of crimes against the ecosphere. A few paragraphs later, I come across heads of state of major industrialized countries who are getting involved with chemistry, refrigerators, aerosols and inert gases ... Toward the bottom of the page, Third World countries and ecologies add their grain of salt and talk about international treaties, moratoriums, the rights of future generations, and the right to development. The same article mixes together chemical reactions and political reactions. A single thread links the most esoteric sciences and the most sordid politics, the most distant sky and some factory in the Lyon suburbs, danger on a global scale and the impending local elections or the next board meeting" (1993, page 1).

Latour argues that modernity is characterized not only by the proliferation of nature - culture hybrids, but by the contradictory epistemological practices of purification, of radical distancing of objects from subjects, of 'nature' from 'culture', thus hyperpolarizing the discourses between, for instance, the natural sciences and cultural studies:

> "Our intellectual life is out of kilter. Epistemology, the social sciences, the sciences of texts-all have their privileged vantage point, provided that they remain separate. If the creatures we are pursuing cross all three spaces, we are no longer understood. Offer the established disciplines some fine sociotechnological network, some lovely translations, and the first group will extract our concepts and pull out all the roots that might connect them to society or to rhetoric; the second group will erase the social the political dimensions, and purify our network of any object; the third group, finally, will retain our discourse and rhetoric but purge our work of any undue references to reality-*horresco referens*-or to power play. In the eyes of our critics the ozone hole above our heads, the moral law in our hearts, the autonomous text, may each be of interest, but only separately" (1993, page 5).

It is thus not surprising, following Latour's argument, that there has been so little engagement of the social-construction-of-nature thesis by natural scientists, as both sides have each attempted to stake their contrary epistemological claims on the same reality. In recent times, in fact, natural-science-based conservationists have strongly rejected social constructivism because of what they perceive to be its nihilist leanings (Soule and Lease, 1995). The irony of this rejection, by some natural scientists and others, is that it is predicated on a particular social construction of nature-one which is purified of its embeddedness in cultural schemes of knowledge and transformative practices, and hence stakes out this pure nature as worthy of protection from adverse human influence. The close association of biodiversity-protection efforts with applied natural science (for example, conservation biology), coupled with the predominant objective of these efforts in the preservation of more quintessentially natural places, is thus understandable in this light.

The contemporary biodiversity-conservation movement, legitimated in large part by natural science, can thus be seen in Latourian terms as a purificationist response to the proliferation of nature - culture hybrids in recent times. This act of purification, inherent in the bulk of biodiversity conservation, is a linked epistemological and ontological project, seeking to cordon off or recreate spaces of nature as nonhuman habitat in the midst of industrial society's apparently insatiable appetite for commodifying the biophysical realm. In its efforts to understand and preserve the habitat needs of nonhuman species that tend not to thrive in hybridized environments, biodiversity-conservation science serves an important and laudable goal.

Like its earlier counterparts, the biodiversity-conservation movement acts within and on an ideologically ridden geographical terrain, one where divisions of space and senses of place are both context and product of biodiversity-conservation practice.

The US Far West is exemplary in the case of biodiversity protection. This is a region known perhaps even more for its spectacular 'natural' landscape-its ancient forests, hot deserts, rugged mountains, wild rivers, harsh coastline-than for its familiar urban landsscapes such as Seattle, San Francisco, and Los Angeles. The question of biodiversity protection in the Far West is especially acute at the time of this writing. Though the culture of the West has long been marked by a fierce independence, a fiery assertion o.f local control over the public lands that prevail in the West (Voight, 1976; Wyant, 1982), the spatial scope and potential economic impacts of recent biodiversity-conservation efforts in the West have cut directly across the grain of the contemporary US political climate, which is increasingly hostile to any form of environmental protection that interferes with capitalist economic growth, or does not yield immediate, tangible, and broad human benefits. The most recent incarnation of this movement has developed as a direct response to the biodiversity-protection victories won by environmentalists in the last decade, and the resultant control over resource-use decisions on public lands.

The struggle over biodiversity is, however, not limited to debates over public resources, nor to questions of biology. Rather, the contentious question of private property is at the yeart of contemporary political debates over biodiversity protection. So-called 'takings' legislation, designed to protect private landowners' rights, has become a rallying cry for conservative politicians who, in their alliance with landowners and resource-extractive corporations, have sensed a basis for national political support in the growing contempt of federal control of local resource-use decisions. The question of private property takes a particular geographical twist in the US West where a significant proportion of lands are federally administered, and the burden for biodiversity protection has increasingly shifted toward federal lands.

A safe space for the spotted owl: the Pacific Northwest and southern California

Contemporary biodiversity-protection efforts in the United States have been supported by one major piece of legislation: the Endangered Species Act [ESA (Kohm, 1991; Tobin, 1990)]. The use of the ESA by environmentalists has proven a contentious weapon in the increasingly bitter struggle over appropriate human uses of nature. Its species-by-species approach, creating protected reserves-divisions of space-for each threatened or endangered animal or plant, is increasingly coming under question from the scientific as well as from the business community. The application of the Act results in a fragmented and complex physical, financial, and regulatory landscape, often preserving species during their last dying gasp. For the protection mechanisms of the Act to be put in place, a species must be near extinction. Often it results in too little too late, and engenders tremendous acrimony.

We will focus on the case of spotted owl conservation to suggest how the social construction of nature forms the basis of contemporary biodiversity science and politics. There are several subspecies of spotted owl; two in the Far West include the northern spotted owl *(Strix occidentaZis caurina)* which is found in coniferous forests of Washington, Oregon, and northern California (figure 1), and the California spotted owl *(Strix occidentaZis occidentaZis)* which is found in the forsts of the Sierra Nevada and southern California (figure 2). The listing of the northern spotted owl as a threatened species pursuant to the Endangered Species Act in 1990 was a pivotal event in the debate over biodiversity conservation in the Pacific Northwest;

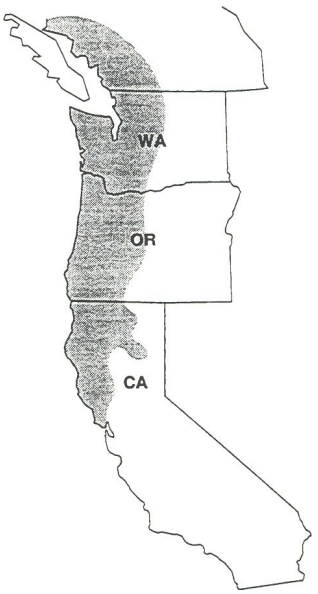

Figure 1. Range of northern spotted owl *(Strix occidentalis caurina)* in the Pacific Northwest; the states of Washington (WA), Oregon (Or), and California (CA).

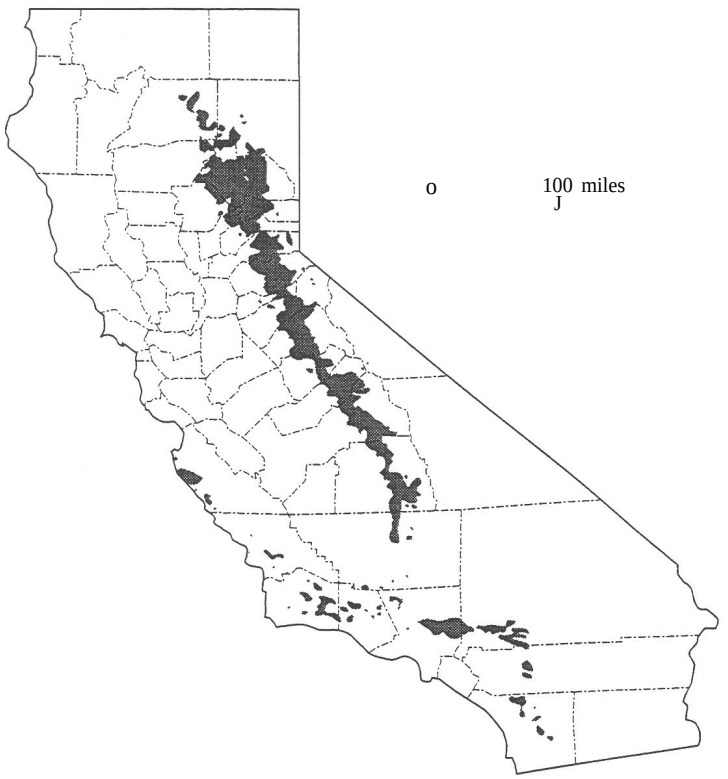

Figure 2. Distribution of the California spotted owl *(Strix occidentalis occidentalis)* (source: Verner et al, 1992, page 56).

a threat by environmentalists to propose lising the California spotted owl in a similar way provided a major catalyst for the reconsideration of US Forest Service management practices in the Sierra Nevada among affected parties.

Though many biophysical and cultural details differ in these two cases, one detail is strikingly similar: the distinctions in both regions between owl habitat deemed more and that deemed less worthy of protection. There is a marked contrast between spotted owl conservation efforts in the federal forests of the Pacific Northwest and the private forests of the region; an equally stark contrast exists between the preservation efforts in federal forests of the Sierra Nevada and those of southern California. These contrasts are indicative of ongoing processes of purification, in which distinctions between terrain which is and that which is not consummately natural are, we suggest, embeded in, and reproduced by, nature-transforming social practices.

Our approach here will be to examine spotted owl conservation on the margins: this will involve particular focus on spotted owl conservation in private forests of the Pacific Northwest, and in the public forests of southern California. The way in which owl-conservation efforts have (literally) taken place in these marginal terrains brings into clear focus that which is consummately natural, and also reveals similarities and differences with respect to these two cases in how the spatial and ideological bounds of nature are constituted through biodiversity-conservation efforts.

The Pacific Northwest

Pacific Northwest forests are the primary terrain where the spotted owl has gained its notoriety. Never before has the Endangered Species Act had such a tremendous political and economic impact. The case of the northern spotted owl looks like a success story in contemporary biodiversity conservation, in which the biological needs of a single threatened species have become paramount in land-use decisions affecting the biophysical and economic landscape throughout much of the region.

What we wish to show, however, is a slightly different story; one with a mixed ending. The standard success story starts to come apart when one considers the ways in which northern spotted owl conservation efforts have served to reproduce divisions between public and private space. Indeed, by enlisting science to promote a purified nature in public forests, these conservation efforts have served to legitimate the commodification practices central to private forests in which nature is enlisted to produce wood fiber. Yet private forests were once the primary habitat of the northern spotted owl-a history that is forgotten (indeed, furthered) in the pragmatist political climate of contemporary environmentalism.

Background

Coniferous forests are the distinguishing vegetative feature of the Pacific Northwest west of the Cascade Mountain range. These forests have been temporally dynamic in response to biophysical processes ranging from fire (Franklin, 1988; Spies and Franklin, 1988) to climate change (Whitlock, 1992), and display considerable spatial dynamism and variability as well (Franklin and Dyrness, 1988; USDA-USDI, 1994, pages 3-16). The heterogeneity of Pacific Northwest forests in space and time has resulted in a considerable terrestrial diversity, including, for example, three times more mammalian species, and twice as many birds, as the coniferous forests of the US southeastern coastal plain (Harris, 1984).

One of the major divisions of space in Pacific Northwest forests has been that between public (largely federal) and private forests. As suggested in the late 19th and early 20th century history of the Pacific Northwest, the highest quality forests of

the region-typically low-elevation, flat, and with good accessibility to transportation and markets-were quickly snatched up by large timber companies, leaving the more marginal forests for later public ownership as forest reserves (Robbins, 1982; Schwantes, 1989; Williams, 1989, page 313). The current pattern of forest tenure in the Pacific Northwest is largely a result of the liberal federal land-grant laws of the United States in the late 19th and early 20th centuries, which effectively shifted the control of forests from public to private hands (Williams, 1989). The case of Weyerhaeuser is perhaps most startling (Williams, 1989, pages 310-315 and 426-428). By about 1913 the Weyerhaeuser Timber Company directly controlled 96 bbf (billion board feet) of timber; and by including other timber companies controlled in part by George Weyerhaeuser, his stockholders, or associates the total rises to 292 bbf, roughly one half the timber found in US national forests at the time.

The economic logic behind the acquisitions of timberland in the Pacific Northwest by private companies in the late 19th and early 20th centuries is borne out in recent figures, which confirm the qualitative distinction between private and public forests. For instance, 42% of the 'highly productive' forest sites (sites that can produce over 120 ft3 per acre per year) of the Pacific Northwest are found in private holdings, compared with only 21% found in national forests (Olson, 1988, page 8). Yet this is not all these forests are good for: ecologists note that the more mesic temperate conditions of low-elevation forests in the Pacific Northwest result in potentially superior habitat for a variety of amphibians, reptiles, and mammals (Harris, 1984, page 53f). Vertebrate-species richness is strongly inversely correlated with elevation: far more vertebrates are found in lower-elevation forests (Harris et ai, 1982). Indeed, a major proportion of the historical ranges of many animal species in the Pacific Northwest occurs outside of federal lands (USDA-USDI, 1993, chapter IV, page 189). For instance, 67% of amphibians, 75% of birds, and 73% of mammals noted to be associated with late-successional and old-growth forests have over one half of their historical range on nonfederal (principally private) lands (USDA-USDI, 1993, appendix IV-C). Private forests of the Pacific Northwest are thus generally of better quality than are public forests, both from timber-production and from biodiversity-protection standpoints, creating the basis for major conflict between these two objectives.

Biodiversity-conservation efforts in the Pacific Northwest have primarily focused on federal forests-the major remaining repository of late-successional or 'old-growth' forest habitat. Old-growth forests can be defined in a number of ways most of which focus on their structural complexity, which for Douglas-fir forests generally requires roughtly 200 years to achieve after stand-replacement fire or c1earcutting (USDA-USDI, 1993). Though no precise figures on current old-growth habitat on private lands are available, it is significant that only 5% of commercial forest industry lands consists of stands greater than 100 years in age (USDA-USDI, 1994, pages 3-7). A clear contradiction thus exists between commercial timber production on private lands, in which trees are cut after 40 to 80 years, and old-growth habitat development which, as noted above, typically requires far more time. The combined effect of private acquisition of a significant proportion of the forests of the Pacific Northwest, coupled with timber-management practices that virtually preclude development of old-growth forests, has played a significant role in the overall reduction and fragmentation of old-growth habitat in the region.

Recent conservation efforts concerning late-successional public forests of the region have considered a wide range of terrestrial and aquatic species associated in particular with late-successional forests of the region (Johnson et ai, 1991; Thomas et ai, 1993; USDA-USDI, 1993). A pivotal event in this process was the Clinton

administration timber summit of April 1993, which resulted in the commissioning of a scientific panel to evaluate and recommend management options for old-growth federal forests (USDA-USDI, 1993). The administration's preferred strategy was known as 'Option 9' (USDA-USDI, 1994); in its revised form, Option 9 provides for some 7.4 million acres of late-successional reserves on federal forests in the range of the spotted owl, with 2.6 million acres of riparian reserves to protect aquatic habitat and provide some reserve connectivity. Although Option 9 provided less environmental protection than did most of the other management options considered, it was widely perceived by the pro-timber community as a sellout to the environmentalists.

Despite an overall emphasis on public lands, the potential contribution of private forests to biodiversity protection did not go entirely unnoticed in the federal planning process. For example, in the Final Supplemental Environmental Impact Statement on Option 9 the potential conservation role played by nonfederal lands in spotted owl recovery is explicitly recognized, though it is claimed that these needs are being addressed by the Fish and Wildlife Service (FWS) in their proposed protective measures under ESA section 4(d) (USDA-USDI, 1994, pages 3-244), to be discussed below. Nonetheless, the Clinton administration has continually promised to 'balance the equation' by easing logging restrictions on private lands. For example, a press release in December 1993 focused on the proposed release of noncritical private forests from spotted owl protection as a means of freeing these forests to provide more timber *(Eugene Register-Guard 1993).*

The northern spotted owl and private forests

The northern spotted owl has, for the last several years, been the flagship species for biodiversity conservation in Pacific Northwest forests. After considerable public debate the owl was listed as a threatened species effective June 1990, by the FWS pursuant to the ESA (USDI, 1990). Since the listing, the FWS have designated a total of 6.9 million acres as critical owl habitat to ensure the recovery of the species (USDI, 1992a), and filed a draft recovery plan (USDI, 1992b). Recent owl-recovery efforts have been coordinated with larger federal proposals for biodiversity conservation on public forests, such as Option 9.

It is clear why the bulk of owl-conservation efforts have been devoted to public forests. Of over 36 million acres of historical range in California, Oregon, and Washington, only 25% is currently considered to be suitable late-successional nesting and roosting habitat, of which 90% of this is on federal lands (USDI, 1992b, page 34; USDA-USDI, 1994, pages 3 - 212). This preponderance of habitat on federal lands is especially reflected in Oregon and Washington, where less than 13% of known northern spotted owl nesting sites are located on nonfederal (state and private) lands (USDI, 1995, page 9495). Yet private forests likely represented the heart of owl nesting, roosting, and foraging habitat prior to European settlement, given their ecologically rich low-elevation location. Indeed, figure 3 suggests that for Oregon and Washington a significant proportion-fully 57%-of the northern spotted owl's historical range lies outside of federal jurisdiction (USDA-USDI, 1993, chapter II, page 20), of which over 80% is privately owned (USDA-USDI, 1994, pages 3 - 7). Historical and current owl habitats thus differ markedly in location as well as in extent.

Although the FWS has identified multiple roles which nonfederal lands can play in northern spotted owl conservation, the bulk of their attention has concerned the important role of these lands as dispersal habitat between reserves in federal forests, given the spatial patterning of private and public forest tenure in the region (USDI, 1995, pages 9495-9496). There is an important political reason for this decision

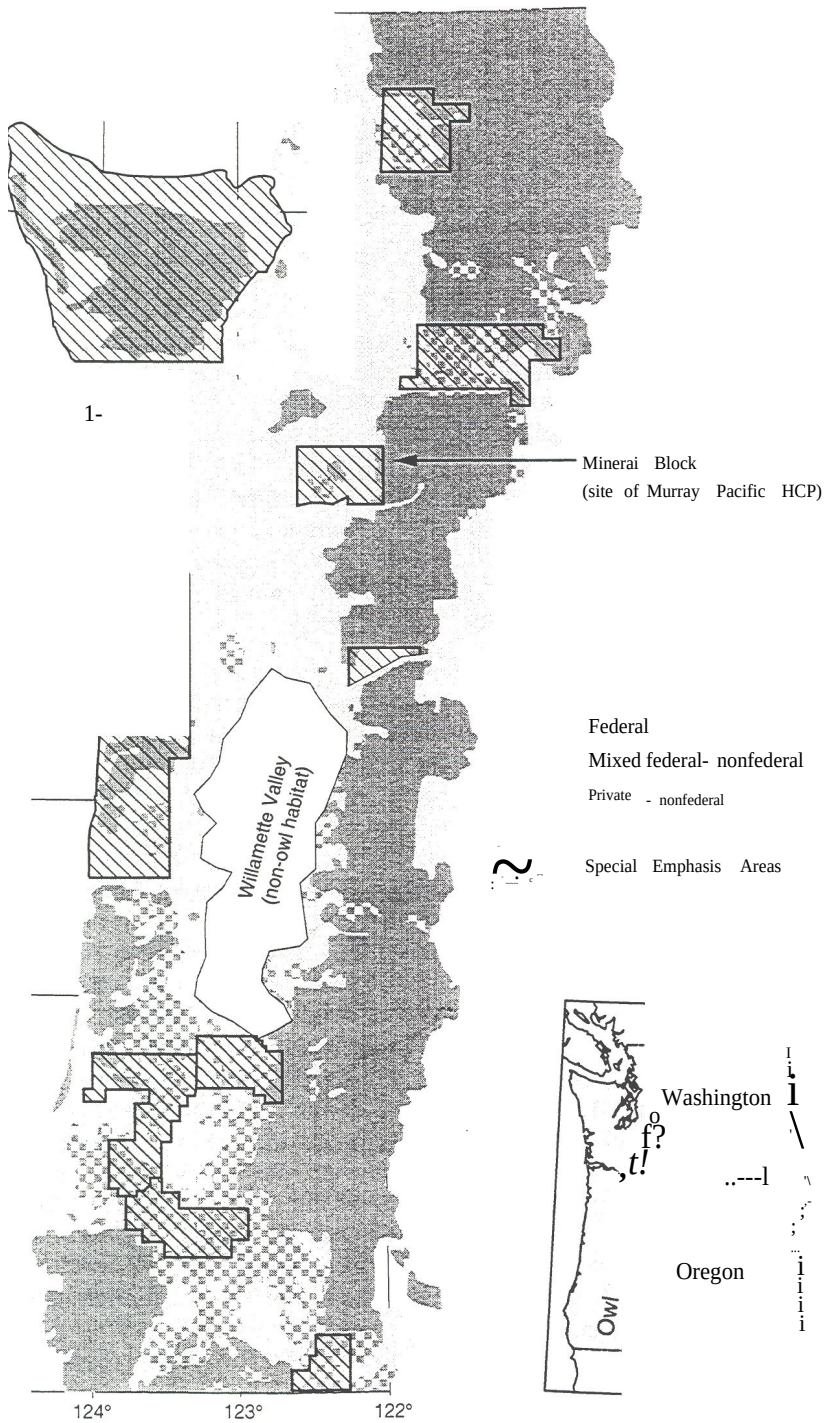

Figure 3. Recent land tenure within the historical range of the northern spotted owl in Oregon and Washington, with location of Murray Pacific habitat conservation plan and the Special Emphasis Areas proposed in 1993.

as well: owl dispersal habitat is subject to far less stringent requirements than is nesting, roosting, and foraging habitat, and thus poses less of a threat to timber production on private lands.

One benchmark recommendation for dispersal-habitat characteristics is the first major spotted owl conservation plan (Thomas et ai, 1990). The 'Thomas plan' recommended that a set of characteristics be maintained in the matrix connecting core habitat areas to facilitate dispersal of juvenile owls to new nesting areas, and thus to ensure genetic flow. The specific rule proposed in the Thomas plan, called the '50 -11- 40' rule, specifies that at least 50% of forested land in each quarter township has trees averaging a minimum of 11 inches in diameter at breast height, and a canopy closure of at least 40%. Although mandating its adoption on private lands would have been beyond the bounds of the Thomas plan, the plan did explicitly recommend that private forests in potential dispersal zones adopt the 50 - 11 - 40 management target as well.

Private forests have, however, gradually receded into the background in northern spotted owl conservation plans, as landowners have fought hard to exempt their forests from any restrictions whatsoever on timber production. The first major dispute involving private lands occurred with the designation of owl critical habitat following the listing decision. In its first proposal, published 6 May 1991, the FWS included 3.0 million acres of private lands in its overall scheme of 11.6 million acres (USDI, 1991a); most of these lands were in mixed federal/nonfederal tenure zones. The FWS softened the blow by explicitly removing private lands from most restrictions (including enforcement of the 50 -11-40 rule), stating that "... private lands are directly affected only where Federal involvement occurs (i.e., activities funded, authorized, or carried out by a Federal agency)" (USDI, 1991a, page 20822). In fact, the FWS draft economic analysis gave no indication of any reduction in private timber harvest expected to arise from the inclusion of private forests in critical habitat areas (USDI, 1991b, page 14).

Yet the perceived threat was real enough for a consortium of timber interests to submit a set of comments on the FWS proposal, citing-among other impacts-a 35% reduction in harvests on private forests, with over 93000 jobs lost overall as a result of the action (Northwest Forestry Association, 1991). These figures were based on a presumed total ban on timber harvests on private and public lands within conservation areas. Their strong lobbying efforts resulted in a revised proposal, dated 13 August, which removed all 3.0 million acres of private forests from further consideration as critical habitat; this action set a precedent for the final ruling on critical habitat, in which no private lands were included (USDI, 1992a).

Private forests and the Endangered Species Act

More recently, the struggle over the role of private property in owl conservation has concerned means by which private landowners can legally avoid incidental-take provisions of the ESA. Section 3(18) of the ESA defines 'take' as involving actions such as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting listed species. 'Harassment' can include activities such as logging that disturb nesting and breeding activities; this form has recently been interpreted as implying logging within the nearest 70 acres of suitable nesting and breeding habitat (a 1000 ft circle around a nest) within the owl's reproductive period of 1 March through 30 September (USDI, 1995, page 9491). The concept of 'harm' has been interpreted more broadly, to relate to logging activities occurring within the median home range of spotted owls which varies from approximately 3000 acres in the Oregon Cascades to over 14000 acres in the Olympic Province

(USDI, 1993, page 69145). Specifically, harm can legally occur when logging reduces this habitat to under 40% of its prior areal extent. Section 9 ESA provisions regarding takings of listed species are thus quite complex, and have led to numerous legal disputes during the last several decades of implementation of the ESA (Quarles et ai, 1993).

The prohibition of incidental take of spotted owls on public and private lands throughout its historical range went into effect when the owl was listed in 1990. Yet two major provisions in the ESA can enable private landowners to pursue activities which would otherwise be construed as incidental take; the first is the habitat-conservation-plan (HCP) process. After an amendment to the ESA in 1982, incidental take was permitted on private property if the landowner had filed an approved HCP for the area. Though HCPs provide a means by which private landowners can avoid the risk of incidental-take violations, relatively few HCPs have actually been approved since the 1982 amendment, and these were often the result of lengthy and costly deliberations (Beatley, 1994; Thornton, 1993).

Nonetheless, several large forest landowners in the range of the northern spotted owl have prepared HCPs. One of the first approved HCPs involves a roughly 50000 acre stand of timber in the Mineral Block of Lewis County, Washington (figure 3) owned and managed by Murray Pacific Corporation (Beak Consultants Inc., 1993). The Murray Pacific HCP focuses on managing the corporation's timber holdings as dispersal habitat. The economic basis of Murray Pacific's approach is clear in that 42% of their currently merchantable timber lies within the home range of known spotted owl nesting sites and would thus be subject to incidental-take restrictions. In addition, activities such as precommercial thinning, proposed by Murray Pacific to develop and maintain dispersal habitat, are expected by the corporation to increase the commercial value of their standing timber, and will stabilize the rate of return to be gained from their standing-timber assets. The Murray Pacific plan was used as a model by Weyerhaeuser, which has filed a similar HCP for 200000 acres of its land in coastal Oregon (Specht, 1995).

It is difficult to assess whether the Murray Pacific HCP will in fact produce adequate owl-dispersal habitat. The main problem is that very little is known about what constitutes adequate dispersal habitat for owls; the Murray Pacific plan simply proposed a set of criteria quite different (and much less economically disadvantageous) than the 50 - 11 - 40 rule of the Thomas plan (Beak Consultants Inc., 1993, page 224). There is simply no basis to predict the effectiveness of the Murray Pacific HCP as a model for dispersal habitat, in contrast to its clear economic benefits as a plan for timber management in Murray Pacific forests.

In addition to the HCP process, the FWS has the authority to propose a special rule pursuant to section 4(d) of the ESA to exempt certain private landowners from incidental-take restrictions. In a notice of intent, filed 29 December 1993, the FWS outlined a major proposal to redefine federal spotted owl protection on nonfederal lands based on 4(d) provisions (USDI, 1993). The FWS plan focuses on 'Special Emphasis Areas', or SEAs, located in largely nonfederal areas which for the most part play critical connectivity roles relative to the matrix of late-successional reserves under the Clinton administration's Option 9 (see figure 3). The 1993 proposal relieved most federal prohibitions against take of the northern spotted owl outside of SEAs, as well as in Indian reservations and in the state of California (the official reason for exclusion of these latter areas was the FWS's intent to recognize efforts to develop their own spotted owl conservation plans). Although SEAs were originally identified primarily for connectivity purposes, the FWS interpreted its jurisdiction to be limited to spotted owl 'activity centers', which are defined as sites

of actual or potential nesting by spotted owls. Within SEAs, timber harvest would constitute take only if it reduced by over 40% the suitable nesting, roosting, and foraging habitat related to an owl activity center. The 1993 proposal thus not only eased spotted owl protection on private lands by focusing only on SEAs; it also failed to provide for maintenance of dispersal habitat in the forest matrix-the very reason most SEAs were selected.

The current FWS proposal, as outlined in a Federal Register bulletin dated 17 February 1995, makes frequent mention of the split between federal and non-federal lands (USDI, 1995). The philosophy of the proposal as stated throughout is to relieve private landowners of the burden of owl conservation given the sizable commitment of federal lands to this task under the Clinton plan. In fact, as much of the proposal is devoted to detailing the various forms of relief which private landowners have as is spent discussing how private forests are envisioned to contribute to owl conservation. In all, the proposal includes no fewer than seven special forms of relief, including relaxing incidental-take restrictions on private lands outside of SEAs (including over 5 million acres of forested lands in the state of Washington alone), exempting small landowners who possess less than 80 acres of forest in SEAs, and lifting most federal incidental-take restrictions on tribal forestlands.

The 1993 proposed rule applied only to nonfederal forests within the range of the owl in Oregon and Washington; the revised 1995 rule excludes Oregon, in recognition of the state's intent to craft an 'Oregon Alternative'. Additionally, though California is reintroduced in the revised plan, it is largely spared by virtue of its own state plans regarding owl and biodiversity protection. There are also important differences in the SEAs delimited in the 1993 and 1995 proposals. For instance, the FWS originally identified the entire Olympic Peninsula region as an SEA, whereas the revised proposal focuses only on a band of private land on the western edge. The FWS justifies this change by arguing that this western edge provides the most significant role in owl conservation relative to other private holdings in the Olympic Peninsula (see also Holthausen et ai, 1994; USDI, 1995, page 9501). Other large swaths of nonfederal lands are explicitly excluded in the current proposal. Perhaps the largest area of forest with virtually no remaining owl habitat is southwestern Washington, which is almost entirely controlled by private landowners and the state (figure 3). The revised proposal argues that (a) although it was historically a major habitat element, very little appropriate habitat exists today; (b) the ESA cannot force corporations to restore habitat; and (c) federal acquisition of land would be too expensive (between $200 million and $2 billion) (USDI, 1995, pages 9501- 9502). In sum, the FWS has outlined a policy of pragmatic triage on these private lands-of abandoning hopes of directing owl conservation policy on many formerly critical portions of spotted owl habitat.

Summary

The foregoing account suggests that increased biodiversity protection in public forests of the Pacific Northwest has by no means been matched by increased protection on private forests; in many ways, the former has occurred at the expense of the latter. One could argue that this spatial triage has been inevitable, given the federal government's relative lack of power to enforce habitat protection on private lands. Yet the case of the owl speaks of a near collusion between federal forest management and biodiversity-conservation agencies and private landowners, an agreement that public is public and private is private and ne'er the twain should be confused. Conservation science has followed this political trajectory, working diligently to determine how to ensure the owl's survival on federal lands. Conservation science

has also assisted the case of private landowners in justifying their management practices. The result is the purification of the realms of nature and culture on the forested landscape of the Pacific Northwest. Although this might work for a species like the spotted owl, which retains relatively significant amounts of habitat on federal lands throughout the Pacific Northwest, these policies could lead to the demise of other species that depend more substantially on parts of the region which fall largely under private ownership. And indeed, it is largely a question of the probability of *survival* of these species that the ESA addresses, not whether or not they can *thrive* in these conditions. Any extraneous habitat not determined to be necessary for the species' survival can thus be committed to commodification.

It could be objected that this analysis has committed a similar purificationist act in suggesting that timber production and owl protection are incompatible. Indeed, one of the major recent forest-management theories, dubbed 'New Forestry', attempts to reconcile these two objectives by techniques such as selective cutting (as opposed to clearcutting) and attention to the habitat context of the larger landscape in which a timber unit is located (Debell and Curtis, 1993; Franklin, 1992; 1993; Orians and Franklin, 1990; Swanson and Franklin, 1992). Yet New Forestry can entail significant economic costs because of reduction of timber harvests over the long term by an estimated minimum 25% (Long and Roberts, 1992; McComb et al, 1993), which many timber companies may be neither willing nor able to absorb, in particular given the recent competitive disadvantage of Pacific Northwest lumber production relative to other sites in the USA and elsewhere (Graham and St. Martin, 1990; Olson, 1988). There is little doubt that northern spotted owl nesting, roosting, and foraging habitat needs stand in direct conflict to the timber industry's historical intent to convert all old-growth forests of the Pacific Northwest into managed (and productive, from a wood-fiber standpoint) forests.

Southern California

Biodiversity **in** California

California is a highly complex area, with more climatic and topographic variation and more endemic species than any other region of comparable size in the USA (Schoenherr, 1992). This dense diversity finds itself in the path of land development, and the state now leads continental USA in numbers of threatened and endangered plants and animals. The ecosystems of the state have been highly impacted: for example more than 90% of its coastal wetlands have been lost, and 98% of its cottonwood and willow riparian forest have disappeared. The federal and state governments have listed more than 250 threatened or endangered plant and animal species in the state. Additionally, 599 plants (9% of the native species and subspecies) and 306 vertebrates (30% of the full species of natives) are documented to be declining or seriously at risk of extinction (Jenson et al, 1993, pages 51, 53; Schoenherr, 1992). Habitat fragmentation which contributes significantly to species extinction is prevalent, especially in the south, because of the extent of land development. For example, in San Diego county, housing and road construction in the chaparral have created small isolated patches of untouched habitat which are too small to support several of the common chaparral bird species. As a result, populations of wrentit, Bewick's wren, and California quail have been eliminated (Jensen et ai, 1993, pages 31- 32).

Fragmentation is an aspect of the social construction of nature; it is the physical outcome of political and economic (hence social) negotiation regarding land-use designations at city and county government levels. This social process of deciding which lands are to be developed and which are to be set aside, has objective

biophysical effects: it may lead to the extinction of species from an area if the individual patches of vegetation are too small to support the species (Jensen et ai, 1993).

The California spotted owl

The decline in the state's biodiversity, combined with the listing of the northern spotted owl, led environmentalists in California to examine the biological status of the state's own spotted owl, the California spotted owl, found throughout the Sierra Nevada mountain range and in the major mountain ranges in southern California. Having failed in attempts to preserve the biodiversity of the forests of. the Sierra Nevada in the state through initiative (Big Green and the Ancient Forest initiative in 1990), environmentalists turned to other strategies, including the Endangered Species Act.

With no extensive scientific information, the Wilderness Society threatened to start the process to list the California spotted owl as an endangered species as a tool to force the preservation of old-growth forests in the Sierra Nevada, as it was known from northern spotted owl information that old trees were an essential part of owl habitat, and they were being cut in the National Forests of the Sierra Nevada mountains. The Natural Resources Defense Council followed up by filing a number of administrative appeals, challenging Forest Service timber sales in the Sierra Nevada mountains (Policy Implementation Team, 1994, page 2).

Fearing a potential listing, the state established a joint steering committee in 1991; this consisted of the federal and state forestry-and-wildlife agencies, non-governmental observers from environmental groups, timber and forest-products industries, and several other representatives. The group commissioned an official biological survey of the California spotted owl population by a Technical Commission.

In its 1992 report, the Technical Commission concluded that the Sierran population of spotted owls did not seem to be declining, though forest management-both public and private-needed to change to maintain viable owl habitat for the future (Verner et ai, 1992, page 4). The commission found approximately 72% of the known California spotted owl sites within the Sierran province, forming a contiguous and fairly evenly distributed population with relatively uniform density throughout the 400-mile length of the mountain range. Approximately 54% of the estimated acres of potential suitable habitat occur on National Forest system lands (Verner et ai, 1992, page 4).

The Technical Commission report pointed out that there was inadequate knowledge to determine whether the annual populations of the owls had been growing or declining in the Sierra Nevada, but that for the short term the overall population could be judged stable. However, because of the general lack of information about nearly all phases of the owl's biology and ecological relationships, the report recommended changes in forest-management practices for the Sierra Nevada that would tend to preserve old-growth trees, a relatively dense forest canopy, and sufficient downed material to sustain owl prey. These recommendations, detailed as to their effect on timber cutting, met with great skepticism and determined opposition from the industry as they would lead to declined harvests of big trees.

In southern California, the range of the owl includes the central Coast Range, the mountains ringing the Los Angeles Basin, and the ranges south toward the Mexican border (Policy Implementation Team, 1994, pages 1,2). These include eleven major mountain ranges and mountain complexes, primarily within National Forests. Historically, owls had a wider range which included coastal riparian lowlands, but these, by and large, converted to urban uses are no longer available to the owls

(Verner et ai, 1992, page 46). Owls can be found in live-oak/big-cone Douglas-fir forests at elevations of 2000 to 5000 ft and mixed-conifer forests at elevations from 5000 to 8000 ft in the Angeles and San Bernardino national forests. They are also found in the vestigial riparian - hardwood habitats, especially in Ventura county.

The southern subpopulation of the owl was termed by the Technical Committee a 'metapopulation', a population which exists in a discontinuous fashion with a possibility of exchange of individuals between the population groups. The meta-population inhabits mountain habitat 'islands' surrounded by areas of unsuitable habitat which are traversed during migration between mountains by the populations (figure 4). However, currently those habitats between the ranges have been subject to rapid urban and suburban development which is destroying the corridors that probably served as linkages between mountain ranges (Stephenson, 1991). This, combined with several years of drought, wildfires, water mining (urban areas drawing more water from the mountains as a result of the drought) and increased recreational use of riparian areas which are prime owl habitat (largely on National Forest lands), all contributed to the decline of the existing population of spotted owls in southern California. The Technical Committee report stated that the spotted owl population in southern California appeared to be fragile (Verner et ai, 1992, pages 13 - 14), and that "loss of habitat in ... areas outside the forests reduce the quantity of suitable habitat around the edge of the isolated parcels of National

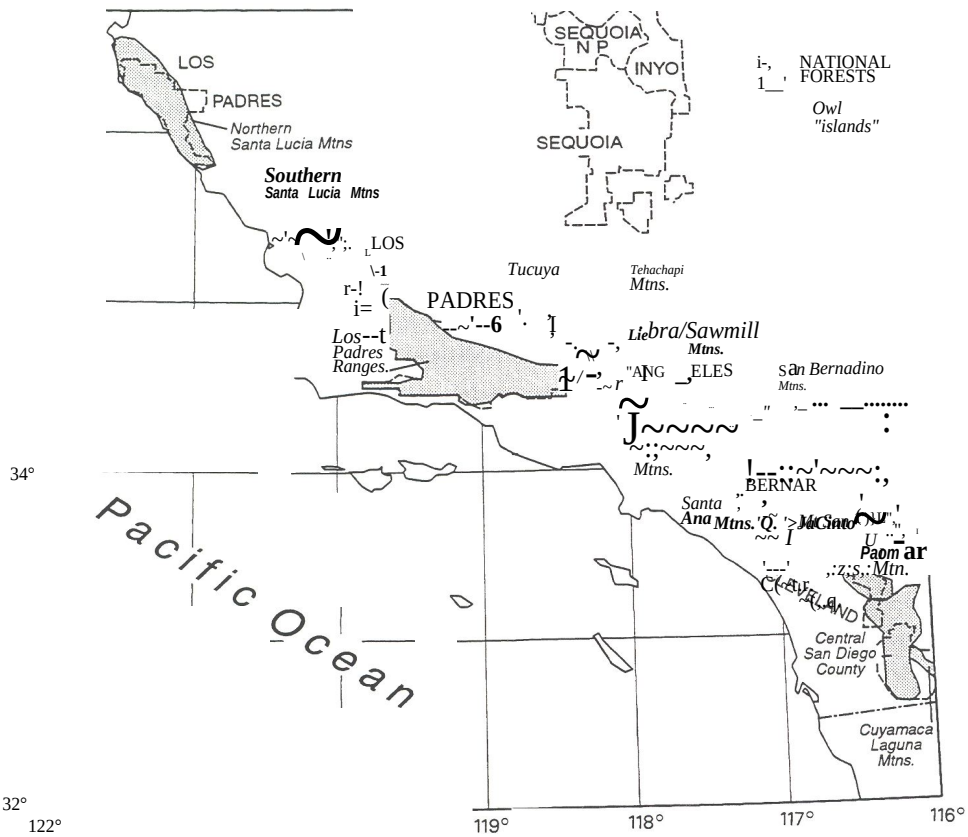

Figure 4. Island populations of spotted owls in southern California (source: Noon and McKelvey, 1992, page 187).

Forest Lands and occasional tracts of habitat on private lands ... *Our concern for spotted owl populations in southern California is much greater than is the case for the Sierra Nevada* because processes are at work there that we believe will further isolate populations from one another ... The likelihood of local extinction resulting from stochastic processes will increase if local populations are further isolated and suitable owl habitat declines" (Verner et ai, 1992, page 51, authors' italics).

Context for spotted owls in southern California

Southern California is defined for this discussion as Los Angeles and Orange counties, western San Bernardino and Riverside, and Ventura counties. Major mountain ranges, which were reserved as National Forests in the late 19th century occupy this area. Surrounding the Los Angeles basin, the peaks of the San Gabriel mountains rise above 10000 ft, and in the San Bernardino Mountains, Mount San Gorgonio reaches 11502 ft (Schoenherr, 1992). Urban development has taken place on the flood plains that surround these mountains, gradually reducing them to isolated islands in an urban sea. Little or no connectivity is left among the ranges, and the riparian corridors that once ran to the sea have, one by one, been converted to flood-control channels and/or developed. Forests show extensive ozone damage in the San Bernardino, San Gabriel, and San Jacinto Mountains. National Forests in southern California receive the highest numbers of visitors per day of any National Forests in California, adding to stress on the forests (Forest and Rangeland Resources Assessment Program, 1988, pages 71 and 295-296). Although the National Forests themselves receive little pressure from direct resource extraction, unlike the logging activities on National Forests of the Sierra Nevada, southern California National Forests have not only become islands on the land, but they also host significant inholdings, a number of which are developed as ski resorts, second-home enclaves, or mines.

The transformations of nature that have occurred in this region are an illustration of Latour's contradictory epistemological act wherein, on the one hand there is pure 'nature', as in the preserved National Forests of the south, and pure 'culture' in the vast urban area and the environmemtal degradation caused by urbanization (smog, for example) represents a nature - culture hybrid that operates in both realms. It is in this context that the southern California spotted owl finds itself.

In 1992 the Technical Committee found that the owl popoulation showed precipitous decline-a 17% annual decline during the 1987-91 study period-in the San Bernardino National Forest, where there is the largest concentration of owls in the southern region (Verner et ai, 1992, chapter 1). The status of owl populations in other southern California National Forests could not be determined because insufficient data were collected, but low numbers of owl nesting sites were found overall. Recent data (LaHaye et ai, 1994), show territorial occupancy to have stabilized in San Bernardino, though demographic data point to continuing decline (W S LaHaye, telephone interview with S Pincetl, August 1995). The nearby San Jacinto and East San Gabriel mountain populations also went through serious decline, but also seem to have stabilized. The Technical Committee report stated "our modeling studies strongly suggest that the stability of the entire southern California meta population depends on populations in the San Bernardino and San Gabriel Mountains. If they collapse, the entire metapopulation will collapse with them" (Verner et ai, 1992, pages 16-17). Biologists cannot be sure what the minimum threshold of owl numbers is which will ensure continued survival, but it is clear that the population is fragile.

An example of the kinds of pressures the owl faces occurs in the San Bernardino National Forest where the Forest Service is currently in negotiation with an existing

ski-resort operator who has petitioned to expand his facility within his permitted area (Gorman, 1993). This area contains a known spotted owl nesting site as well as a number of other threatened species and an endangered plant species (LaHaye, telephone interview, August 1995). The Forest Service has agreed to the expansion proposal, subject to mitigation. This mitigation requires acquisition of suitable owl *territory* (not necessarily currently inhabited by owls) at a two for one ratio, in exchange for allowing actual owl *habitat* on the forest to be converted to additional ski runs. Meanwhile the operator is appealing against the Forest Service proposal on the grounds that the mitigation is too restrictive (D Solis, telephone interview with S Pincetl, August 1995). Such development proposals reflect the urban context which prevails in the mountains. Outside of Forest Service lands themselves, development pressures have greatly increased in the mountains. From 1970 to 1992, the human population in the San Bernardino Mountains went from about 19000 to over 40000, with 5 million annual visitors (Dib and Griffone, 1991).

Each of the southern National Forests supports populations of owls, but as the smaller populations become increasingly isolated because of the reduction in size of their habitats and development in their dispersal corridors, the likelihood of their extinction increases. Maintaining a viable population of owls in southern California depends on maintaining both the size of their habitats and the dispersal corridors between the island populations (Verner et ai, 1992). But viable owl habitat and dispersal corridors largely rest outside of publicly owned lands; in the main they are in the hands of land speculators and developers who consider their holdings private property, hence in the realm of 'culture' rather than of 'nature', and under the regulatory jurisdiction of numerous local governments. Local governments are under fiscal pressure to encourage land development and have no obligation to take into account the cumulative long-term environmental impacts of development approvals.

Species protection is intertwined with the course of urban land development and its ensuing externalities. Over time, the management of urban growth has proven an elusive and difficult issue because it falls under local government prerogative and involves the rights of property as well as the fiscal health of localities (Pincetl, 1994). Development is the key to tax revenues and in the post-Proposition 13 era in California, revenue is a critical local need. Endangered-species protection is seen as an impediment to growth and to fiscal health.

Curiously, the biological health of the region-the ability of the indigenous ecosystems to perpetuate themselves-and of the owl does not figure highly in the work of most major environmental organizations. Local activists have fought for habitat preservation for several endangered species found on lands which are rapidly becoming urbanized in southern California, with the occasional assistance of such large organizations as the Natural Resources Defense Council (Reynolds, 1993), in blow-by-blow specific backyard-preservation struggles such as that over the Stevens kangaroo rat in Riverside county, or the coastal sage ecosystem in Orange county. But the plight of the owl in the National Forests of the south has not elicited the interest or passion of its Sierra Nevadan brethren. The Wilderness Society and the Natural Resources Defense Council, in particular, have spent the vast majority of their legal, research, and lobbying resources on making sure that there was sufficient habitat protected in the Sierra Nevada for the California spotted owl-this despite there being no evidence of owl decline in the Sierra Nevada, but sufficient evidence in the south that the owl is in danger. Indeed, scientific debate about proper forest management to preserve the owls on National Forest lands by the major environmental organizations of the state seems to have been yet another strategy for achieving the preservation of old trees after the failure to preserve the

state's 'ancient' forests by ballot initiative and legislative action. As there is virtually no timber harvesting on southern California National Forest lands, there was no reason to pursue the status of the owl in the south: no reforms of Forest Service timber harvesting could be achieved if there was no harvest to begin with (J Reynolds, telephone interview with S Pincetl, August 1995). The status of the owl in the south could not be leveraged to address the real concerns behind owl protections-saving old-growth forests-so the fact that the owl populations in the south are in precarious conditions was simply not taken up.

There has been only one attempt, in 1995, to list the southern California population of the spotted owl. This was undertaken by a biological consultant, conservation chair of the San Bernardino Valley Audubon Society. Relying on the work of Bill LaHaye, the Forest Service wildlife biologist in charge of monitoring the San Bernardino population, the conservation chair submitted a draft of a petition for the listing of the California spotted owl in the San Bernardino mountains. But ESA listings have been frozen by the conservative congress that came into power in 1995, halting this petition effort (White, 1995).

Species-preservation struggles in southern California are quite distinct from the ancient-forest protection in National Forests undertaken by the major nature-preservation organizations. They involve local groups (sometimes with national support) who are mobilized to oppose land conversion in their backyards, vernacular landscapes. The motivations for engaging in land-preservation struggles against development, in these circumstances, are complex and variable. They range from concern about maintaining biodiversity, through the desire to protect property values by preserving open space, to ideas about what the quality of life entails. But whatever the motivations, the ESA has served as the tool in attempts to try to curb land development as there are few others available given the division of space between public and private and the structure of land-use regulation. The fate of the spotted owl in southern California and of other species found largely on public lands, which need migration corridors, foraging areas, and undeveloped open space which lie in private ownership to survive, is intertwined with the future pattern of land development.

Summary

In a highly urbanized place like southern California, the question of the place of nature is highly complex. It is, by and large, structured by the segregation of space into private and public spheres. The National Forests in the south, because they are seen as exempt from resource exploitation (namely timber harvesting) are considered de facto as preserved nature and protected, whereas the profoundly significant land transformations going on all around them, on privately owned land, remain fundamentally unchallenged except on a selective basis. These challenges are often ones where the nature in one's own backyard is jeopardized and/or an endangered species is found. This approach is understandable, but leads to the generation of further endangered spaces as it ignores the fundamental driving forces that lead to species extinction-the fiscalization of land use caused by the decline in the tax base of local governments, weak land-use planning tools and regulations (Elkin, 1987; Fulton, 1991), the current structure of private property rights, and historic American antiurbanism (Jackson, 1985; Schmidt, 1969). Under this land-use regime, nature becomes private and domestic in the form of yards and parks whereas 'wild and pristine' nature is relegated farther and farther into the hinterland or into nature 'reservations', sites of pilgrimages and visitation.

The sanctity of private property rights creates a spatial division of labor where public lands are responsible for biodiversity protection, and private lands can be exploited in any way which the owner sees fit and the market rewards. Under the present system, any land that is private is exempt from having to be managed to integrate human activity with its inherent natural systems; this not withstanding the fact that the ESA formally applies to private lands as well. This segregation of private property ownership from nature is indicative of a nature constructed as spatially separate from culture-a geographical divide between humans and biodiversity.

The process of the social construction of nature-the historically embedded nature-culture hybrid-and the ways in which it has evolved, remain unexamined. Surely capitalism and private property relations shape the transformation of nature that is occurring today and the divisions of nature that have been elaborated to construct spatial boundaries around certain ecosystems. The confrontation between the movements for the protection of natural systems and those of the rights of private property driving urbanization are the contemporary forces creating the nature of today.

Summary and conclusion

Owl habitat on the margins: California and the Pacific Northwest

In their own particular way, the cases of spotted owl protection in California and the Pacific Northwest each suggest what lies beyond the current bounds of biodiversity conservation. The northern spotted owl has received a level of protection that would have been virtually impossible for environmentalists to imagine some ten years ago; yet conservation policy addressing the needs of the spotted owl and other old-growth-dependent species of the Pacific Northwest has effectively driven a wedge between federal and private forests. Though the rhetoric of biodiversity protection among Pacific Northwest forests suggests the development of an integrated interconnected diverse set of reserves and dispersal habitat covering the varied landscape, the reality is far different. Two major spatial forms predominate: federal reserves where logging has been sharply curtailed in the name of biodiversity protection; and nonfederal (largely private) forests slated primarily for timber production, with minimal biodiversity protection mandated by law.

On the surface, the situation in southern California bears scant resemblance to that in the Pacific Northwest. Large, often contiguous, swaths of suitable owl habitat still exist in the Pacific Northwest, whereas in southern California this habitat takes more the form of loosely-if at all-connected island refugia. Private inholdings are a regular feature of owl habitat in southern California, whereas millions of acres of owl habitat in the Pacific Northwest are in federal hands. And, of course, this Pacific Northwest habitat is, to most people, far more spectacular aesthetically than that in the much drier forests of southern California. The role of the spotted owl as a flagship species in the Pacific Northwest ancient-forest campaign contrasts markedly with its virtual lack of connection with conservation efforts in southern California.

Yet there are striking parallels between owl-conservation efforts in the two regions, in spite of their widely differing settings and trajectories. Since the listing of the northern spotted owl in the Pacific Northwest, California spotted owl biodiversity-protection efforts have focused almost solely on the spectacular forests of the Sierra Nevada and not on those of southern California. These efforts have thus neglected owl habitat lying beyond the margins of purified nature, remaining silent about the devastating effects of urbanization on the sustainability of natural systems in the National Forests in southern California-an urbanization that is slowly

creeping around the Sierra National Forests as well. Like the private forests of the Pacific Northwest, the forests of southern California attest to the limitations of a mode of knowing and caring about nature built upon tacit acceptance of a purificationist logic.

Biodiversity conservation, science, and the reproduction of endangered space

This is where Michael Pollan's epigraph comes back to haunt us: perhaps biodiversity protection is wilderness protection in a new, scientific, guise. After all, are not biodiversity reserves akin to inviolate wilderness? And the rest-is it not worth our attention?

> '"All or nothing', says the wilderness ethic, and in fact we've ended up with a landscape in America that conforms to that injunction remarkably well. Thanks to exactly this kind of either/or thinking, Americans have done an admirable job of drawing lines around certain sacred areas (we did invent the wilderness area) and a terrible job of managing the rest of our land. The reason is not hard to find: the only environmental ethic we have has nothing useful to say about those areas outside the line. Once a landscape is no longer 'virgin' it is typically written off as fallen, lost to nature, irredeemable. We hand it over to the jurisdiction of that other sacrosanct American ethic: laissez-faire economics" (Pollan, 1991, page 188).

The fatal flaw of contemporary biodiversity conservation and conservation science is the attempt to inscribe a purificationist logic on landscapes without acknowledging the larger, unmistakably hybrid, context in which these landscapes are situated. Biodiversity has been threatened to a large extent by commodification-oriented hybridizing practices; protecting biodiversity in pure natural spaces without addressing this commodification of nature does not solve the problem. But to do so would clearly carry conservation science far beyond its recognized boundaries; it is accustomed to treading rather less politically contentious terrain. Thus, conservation science can only with extreme political risk consider questions of owl habitat on private property, urbanized spaces, or in any other unmistakably hybrid landscape. This logic of triage is pragmatically understandable as conservation requires political support, which is far more readily available to save, for example, ancient forests than it is to challenge unrestricted use of private property in the Far West. Institutions such as private property thus reside safely far outside the bounds of a pragmatic environmental politics, which can only accomplish its goals within the structural constraints that exist.

These structural constraints are then reproduced in this process as well. Biodiversity protection at the core of natural space occurs at the expense of protection at the periphery, exacerbating the distinction between so-called natural and humanized landscapes. In fact, the very act of judging recent biodiversity protection as a success reproduces the bounded notion of nature, because it is only within, for instance, the federal forests of the Pacific Northwest, that success is demonstrable. In sum, then, contemporary biodiversity-conservation efforts in the US Far West have served to reproduce the ideologically ridden divisions of space that have contributed to the imperilment of target species. Science, although it has developed convincing knowledges of the deleterious effects upon certain species of the hybrid forms of nature that accompany industrial capitalism, has taken the safe path of focusing on those last vestigaes of pure nature that remain in the United States-the kingdom of the wilderness, in Pollan's words (compare Cronon, 1995).

A redefined nature: toward spaces of inclusion

There can be other approaches to biodiversity protection, but they will necessitate a critical engagement with the entrenched ethics and politics of contemporary environmentalism and the dominant capitalist paradigm. One fundamental step involves rethinking what biodiversity is and why people should care about it-in particular, what sense of nature is implied in our notion of biodiversity. Is biodiversity just spectacular plants and animals, or is it more a symbol of life itself as it has unfolded on earth? And if the latter, what is the place for humans in this tapestry of life on earth? How do we redefine natural spaces?

Ultimately, then, rethinking biodiversity/nature conservation requires the problematization of the ideological and spatial gap between humans and the natural world implicit in contemporary social constructions of nature. As Williams concluded in his seminal essay, "Ideas of nature, but these are the projected ideas of [humans]. And I think nothing much can be done, nothing much can even be said, until we are able to see the causes of this alienation of nature, this separation of nature from human activity" (1980, page 82). Williams speaks of the separation of nature from human activity in two forms: as an irretrievably human construct that nonetheless is typically posited to be the antithesis of human creation; and as an entity into which we all are materially enmeshed, despite our attempts to define it as an other. Nature and culture are, as Latour argued, inextricably linked; to acknowledge so is-ironically-the first step toward saving nature.

Biodiversity, in its most expansive form, includes human beings; protecting biodiversity becomes a metaphor for finding ways that human and nonhuman life may thrive on planet Earth. Extraction of natural resources is part of the historical relationship of people with the biophysical world, though it can take a myriad of forms. Finding practices and metaphors that embrace biodiversity across a broad continuum of landscapes while refusing to accept as inevitable the sedimented institutions responsible for distinctions among these landscapes is the dual task that still remains to be accomplished.

Re-visioning nature, of course, will have to be far more than a mental exercise; it too will have to occur within current structural constraints. There can be no denying that the efforts of environmentalists-aided by the purified and purifying epistemologies of conservation science-to set aside spectacular nature as inviolate reserves, set against the relentless energy of a capitalist economy to engulf nature as material resource, would seem to weigh against much real hope. In this sense, then, the dilemma of biodiversity protection in the US Far West is not so much a problem to be readily solved as a lesson in the social processes that shape the nature of the contemporary American landscape.

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