

turtles, the HCP operational budget is developed annually by the county and must be approved by FWS. Unfortunately, funding approved through a political process is highly insecure.

Aside from trust funds and additional appropriations which provide some glimmer of hope, our review did not identify any plans with adequate, assured contingency funding. For example, no plans include a performance bond up front. This is most problematic for plans that cover large portions of species' ranges, and for plans that involve incidental take permits for multiple decades. The most irresponsible cases are plans that will be more costly to adjust in the future, such as those which involve very expensive land acquisition in urban areas (e.g., Balcones). Moreover, additional mitigation for some plans for species in late-successional habitats (e.g., those for northern spotted owls or red-cockaded woodpeckers) will involve acquiring economically valuable old-growth tracts. In addition, plans that are based on highly uncertain conservation strategies or dubious, untested management techniques (e.g., Clark County's translocation of desert tortoises) do not match that biological uncertainty with contingency funding. For plans that do not start with sound biological goals and conservation strategies, the lack of contingency funding is especially egregious.

Legal Issues

One potential strength of conservation planning is the allowance for flexibility, so that plans can be tailored to specific ecosystems and political circumstances. Nevertheless, it is essential for

plans to be enforceable and consistent with the ESA's goal of recovering species. From a legal point of view, whether plans "work" for species depends on many aspects of the plan, including consistency with conservation requirements of the ESA, practicability, and enforceability and integration with local, state and federal regulations.

Recovery-Based Approval Standards

With the recent explosion in the number of HCPs and other conservation plans across the nation, conservation plans are no longer minor factors in the recovery prospects of many endangered species. Even the first HCP, for San Bruno Mountain, covered 97 percent of habitat for the mission blue butterfly. If most or all of a species' range is covered by HCPs or other conservation agreements, recovery cannot occur unless those plans are consistent with, or contribute to, recovery. Despite this fact, FWS and NMFS maintain that HCPs are not required to contribute to or be consistent with recovery. Moreover, recovery plans currently provide little guidance for conservation plans, and there is little understanding of cumulative effects of multiple conservation plans on the recovery of many species.

Legal Context

FWS and NMFS explicitly state that HCPs are not required to contribute to recovery, but that HCPs inconsistent with recovery "should be discouraged." As stated in the HCP Handbook: "Issuance of a section 10 permit must not 'appreciably reduce' the likelihood of the survival and recovery of the species in the wild. Note that this does not explicitly require an HCP to recov-

er listed species or contribute to their recovery objectives outlined in a recovery plan” (FWS and NMFS 1996). As for the NCCP in California, the NCCP Act itself has no conservation standards, but the Conservation Guidelines established by the scientific review panel call for “no net loss of habitat value” as defined by viable populations. In what could be a policy precedent, however, FWS Region 1 Director Michael Spear testified that “The MSCP will provide for the recovery of covered species within the proposed reserve...,” suggesting that recovery is the goal of that plan.

In the Plum Creek Timber Company HCP for the central Cascades of Washington, however, Plum Creek Timber Company receives regulatory relief from any increase in listed species (i.e., recovery) that may occur under the plan. The HCP is for 50 years (Phase I), followed by a 50-year safe-harbor period (Phase II). From the HCP: “Plum Creek believes that implementation of the HCP may result in increases in populations of listed species on its lands, particularly if more or better habitat for listed and unlisted species is provided in the Planning Area than was projected at the outset.” Plum Creek Timber Company has safe harbor from regulations associated with additional spotted owls and other listed species’ individuals beyond what it projected to support in its HCP. Although a 100-year HCP was considered instead of this phased approach, this “was not chosen by Plum Creek Timber company because it believed 100 years was an excessive period of time for Phase I due to uncertainties of economic projections and operations” (pg. A-166, FEIS). In order to

achieve this flexibility and avoid a longer HCP by having a safe-harbor phase, Plum Creek Timber Company essentially threatens that if it did not have this assurance under Phase II, it would deliberately keep endangered species numbers low: “Plum Creek... would prefer to have the option of providing additional habitat instead of liquidating habitat in fear of regulatory constraints” (p. A-166, FEIS).

This ambivalence about whether plans should contribute to recovery and result in increases to populations is in striking contrast to the ESA’s legal mandate, in which recovery of species is the purpose of the act. According to Section 2(b) of the act, “The purposes of this act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be *conserved*, to provide a program for the *conservation* of such endangered species and threatened species” (italics added). In this context, conservation is the same as recovery because the act defines conservation as “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this act are no longer necessary” (Section 3.3). With recovery as the purpose of the ESA, HCPs and other conservation agreements (especially plans that cover most or all of a species’ range) should be consistent with species’ recovery.

HCPs Without Recovery Plans

Whether or not conservation plans are consistent with population recovery can be difficult to determine, especially for a small HCP that by

itself has a relatively small impact on a species' overall population. The implementation of multiple small HCPs or one large conservation plan, however, can have a large impact on species recovery. Ideally, to aid in determining whether such large and small plans should be approved, the services should check whether they are consistent with recovery plans. This would be most useful if recovery plans were developed as soon as a species is listed and if recovery plans were updated regularly to reflect current scientific knowledge. People developing conservation plans could then rely upon these recovery plans and make sure that the plan is consistent with the recovery plan, especially the recovery plan's biological goals and identification of critical habitat. This would aid outside parties in determining whether conservation plans are consistent with recovery objectives.

Unfortunately, recovery planning is seriously compromised by inadequate funding and by political controversy. Of the 1,119 species currently listed, 40 percent do not have recovery plans (U.S. Department of the Interior 1997). In contrast to listing decisions based solely on scientific information, recovery plans are negotiated documents that incorporate economic and social considerations. In practice, recovery plans tend to place most of the responsibility of recovery on public land and agencies, when possible. Moreover, many plans that have been developed have inadequate biological information (Tear et al. 1995), have not been updated in many years and admittedly are out of date, according to FWS officials. For example, the red-cockaded woodpecker and the San Joaquin kit fox have

recovery plans which have not been updated since 1985 and 1983, respectively, yet their incidental take is authorized under five HCPs evaluated in this report. For the grizzly, environmentalists successfully challenged the 1993 recovery plan because it did not include habitat characteristics (i.e., road densities), and the plan is now being revised to include those characteristics.

Clearly, HCPs and other conservation plans must move forward in the absence of updated recovery plans. When recovery plans are not available, however, conservation plans should incorporate the precautionary principle strategy. That is, conservation plans should have better protection for species, to make up for uncertainties stemming from inadequate information and missing recovery plans. In sum, recovery planning must be substantially improved and adequately funded, and until that happens plans should be judged individually according to their consistency with recovery as a broad goal.

With such a backlog of recovery plans for species, it will become increasingly common for recovery planning to occur after conservation plans have been approved for the incidental take of that species and assurances have been granted to landowners. Recovery plans must take conservation plans into account, since they affect species recovery, but these plans cannot guide or substitute for recovery plans. Under the present legal interpretation, HCPs are particularly inappropriate for guiding recovery plans because they are specifically developed for permitting incidental take and have not been required to contribute to species recovery.

The Volusia County HCP addresses the

effects of humans on nesting habitat for five species of endangered or threatened sea turtles. According to the five recovery plans for the sea turtles (all developed between 1991 and 1993), there are a variety of threats to these sea turtles on land and sea, most of which the five species have in common. With respect to nesting habitat, the actions taken under the HCP are consistent with a variety of measures called for in the recovery plans. These activities include a reduction in vehicular traffic on beaches, standardized surveys of nesting activity, evaluation of nest success and reduction of the effects of artificial lighting on hatchlings and nesting females.

The Massachusetts Division of Fisheries and Wildlife HCP allows the state wildlife agency to permit certain beach managers to have relaxed restrictions for beach use with regard to piping plovers. According to the recovery plan for the Atlantic coast population of piping plovers (approved in 1988), over 20 percent of that population breeds in Massachusetts, and vehicular traffic is identified as a limiting factor to piping plover recovery in Massachusetts. The recovery plan also calls for a variety of protections that are actually reduced under the HCP, including reduced pedestrian recreational disturbance, limited recreational use on and access to beaches with nesting areas, reduced disturbance and mortality caused by off-road vehicles, and fencing and posting of nesting areas. Despite this inconsistency with the recovery plan, the HCP appears to have no measures that would afford added piping plover protection called for by the recovery plan.

The Balcones Canyonlands plan was devel-

oped before the recovery plan for the golden-cheeked warbler (the most important species of concern for the plan). Unfortunately, the recovery plan that was subsequently developed recommended that there should be viable populations of the bird in each of eight regions, one of which was the area nearly encompassed by the Balcones Canyonlands plan. As discussed previously in this report, it is highly unlikely that the plan could result in sustaining a viable population of the golden-cheeked warbler.

As for cumulative impacts on the golden-cheeked warbler, the HCP contains a compilation of Section 7 and Section 10 permits to date within the permit area, but there is no analysis of the overall effect of these actions in combination with the Balcones HCP. Under this section of the HCP, there is an acknowledgment that although the HCP could allow loss of up to 71 percent of potential warbler habitat within the permit area, "under the no-action alternative, the rate of decline of the golden-cheeked warbler is difficult to predict, given uncertainties regarding enforcement of the ESA.... Ongoing reliance on individual permits will do little to stem the primary agents that are responsible for the warbler's decline...."

In terms of the relationship between an HCP and a species' recovery plan, the San Bruno Mountain HCP is troubling. The planning area of this HCP covers 88 percent of the mission blue butterfly's range and 89 percent of the calippe silverspot butterfly's range. Richard Arnold was contracted to develop a recovery plan for the mission blue butterfly in 1981 (before the HCP was developed). When the areas that he recom-

mended as essential habitat turned out to be slated for development under the HCP, the recovery plan was altered until it was consistent with the HCP (Bean et al. 1991). The recovery plan was completed in 1984.

Cumulative Effects on Imperiled Species

The cumulative effects of multiple plans in a species' range may have a large impact on the species' prospects of recovery, even if one or two plans by themselves do not necessarily have a significant impact (National Research Council 1995). Therefore, HCPs and other conservation plans involving incidental take should not be approved without careful analysis of the effect of the plan in combination with current land uses and management plans for lands affecting the species of concern. Addressing the cumulative effects of multiple plans on a single species is extremely difficult, however, especially because state and federal wildlife agencies have poor budgets for the task. This not only involves keeping track of site-specific management regimes, but monitoring populations and habitats at a large scale and understanding the interactions between multiple biological and physical factors.

Because this analysis can be complex, it may be unreasonable to expect one for every small-scale HCP. Multiple low-effect HCPs, however, can cause habitat fragmentation and cumulative loss to the species that will compromise the viability of the species (FWS and NMFS 1996). For this reason, it is imperative that the services have a program to evaluate the large-scale impacts of multiple small HCPs for individual species. As mentioned previously in this report,

this program should involve ongoing, overall monitoring of population and habitats for multiple small HCPs. The plans we reviewed were overwhelmingly deficient in analysis of overall impacts on endangered species, and the services currently have no program in place to analyze and monitor overall effects of multiple HCPs. Even for large-scale conservation plans, the EISs we analyzed provided only perfunctory cumulative effects analyses.

For example, for the Alabama beach mouse, incidental take through several HCPs has been approved. With the approval of the Fort Morgan Paradise Joint Venture HCP, 18.2 percent of the habitat that had remained in 1985 was taken through HCPs. Moreover, while the HCP does not result in direct destruction of designated critical habitat, it is likely that critical habitat will be adversely affected by four 16-story condominiums located within 70 feet of that critical habitat area. FWS claims that take occurring through this and other HCPs will be offset by efforts to increase numbers of beach mice on state-owned lands, through controlling indirect effects such as cat predation. Nevertheless, regardless of what happens on state-owned lands, the development under the HCP will exacerbate indirect effects on mice (e.g., cat predation) despite efforts to minimize that under the HCP. In response to all of these factors, Nicholas Holler, leader of the Alabama Cooperative Fish and Wildlife Research Unit, wrote that "we are getting very close to jeopardy, if indeed we have not reached it." Considering that multiple HCPs have been approved for the Alabama beach mouse and low-density residential development occurs in the

The Florida Scrub Jay and Its Habitat

The Florida scrub jay (*Aphelocoma coerulescens coerulescens*) is an endangered species that occurs only in patchy oak scrub in coastal and central Florida. As much as 75 percent of the scrub has been eliminated by citrus farming and housing development (Noss et al. 1995). Suppression of periodic, naturally occurring fires that clear underbrush which jays cannot occupy also is a major threat to the species' survival. Jays have disappeared from at least 40 percent of their historic locations and are considered likely to vanish from Brevard, Highlands and Palm Beach Counties in the near future (FWS Florida Scrub Jay Recovery Plan, 1990).

The Florida scrub jay has a complex social system. Scrub jays form monogamous breeding pairs that usually mate for life. Each pair vigorously defends its territory, which is about 20 acres on average. Most remarkably, some offspring, although mature enough to breed, stay with their parents to help raise the next year's offspring. These "helpers" are essential to the breeding parents' reproductive success. Parents that have helpers typically rear more fledglings than those that do not (Woollfenden and Fitzpatrick 1990).

All Florida scrub jays fall into one of three social classes: breeder, helper or dependent young. Within each family group, there are clear divisions of labor. For example, breeding females incubate and brood the young in the nest. The breeding male provides her with most of her food intake during this time. Helpers assist with the caring for young, defending territory and, most importantly, protecting the nest against predators. Among helpers some are dominant and usually establish their own breeding territories, usually near their parents' territory, earlier than their subordinates (Woollfenden and Fitzpatrick 1990).



FLORIDA SCRUB JAY, JOE McDONALD/VISUALS UNLIMITED

The territoriality and intense competition for space among Florida scrub jays results from the extremely narrow range of habitat in which they survive and reproduce. This habitat consists exclusively of the endangered Florida scrub ecosystem, which is found in coastal regions and inland. Partly because the ecosystem is restricted to higher elevations, some scientists believe that the Florida scrub jay and other Florida scrub species evolved during interglacial periods when sea level was higher than it is today and present scrub sites were an archipelago of islands. Oak scrub vegetation may be present in areas with abundant patches of bare sand, thickets of scrub oaks or dense stands of sand pine (Noss and Peters 1995).

Because of the natural history of the Florida scrub region, many species found here are endemic. As in southern California, the human population has increased dramatically in the region, a trend that is expected to continue. Without better habitat protection and management, the Florida scrub jay is likely to become extinct.

mouse's habitat, the cumulative effects of these actions may be severe.

At this point, it is important to note that the potentially severe problems from multiple small projects that take habitat are inherently addressed through large-scale conservation planning. In some of the plans reviewed here, the plan itself is an important step in avoiding fragmentation from multiple small projects. For example, the Washington DNR HCP had only a brief overview of the cumulative effects of the HCP because the HCP contains a habitat-based assessment of the HCP's impact on habitat types. Nevertheless, for large-scale HCPs in particular, it is important to analyze the effects of the plan in the context of plans and activities for the rest of the species' range.

Minimization and Mitigation of Incidental Take

At the heart of conservation agreements for endangered species is the authorization of incidental take (usually in the form of habitat destruction) accompanied by efforts to minimize and mitigate that take. Take is fundamental to nearly all conservation agreements. Yet in conservation biology, it is fundamental that loss of habitat or population reduction increases the likelihood of extinction. The key to conservation agreements, therefore, is not only sufficient scientific oversight and control of take, but also adequate efforts to minimize and mitigate that take through an enforceable permit system.

Take and Its Quantification

In HCPs and other conservation plans, there

is no limitation to the types of activities that may result in incidental take. An incidental-take permit authorizes only take that is incidental to otherwise lawful activities, which include "economic development or land or water use activities that... are consistent with other federal, state and local laws" (FWS and NMFS, pp. 1-5). In practice, this takes the form of residential and office development, forest practices, water withdrawal, recreational use, mining and oil and gas development. As a result of these practices, limited numbers of animals may be taken (e.g., one red-cockaded woodpecker group), or large numbers of acres may be disturbed, taking many individuals from multiple listed species (e.g., development in the MSCP planning area).

In some HCPs that address one species, information about the species on the property is adequate. For the Coleman Company HCP, there is a known population of 116 Utah prairie dogs that would have to be translocated, and only two prairie dogs can be killed under the permit. For red-cockaded woodpeckers, there is often good information on where the woodpeckers live on public and private land, making it relatively easy to cap take that occurs under statewide programmatic HCPs for that species.

Estimating and limiting take that occurs under plans is possible only if there is good biological and ecological information on the species of concern. That is, without knowing where the individuals are and how certain activities may affect them, predictions about how much take will occur under a plan are futile. Plans that involve incidental take must also include a quantifiable cap on the amount of take under the

plan. This limitation of take is especially necessary for programmatic HCPs, where an agency or jurisdiction allows take through a program that applies to many private landowners. As stated in the HCP Handbook (FWS and NMFS 1996), "the central problem in preparing a programmatic HCP is having sufficient information to determine and evaluate effects when the exact number and scope of actions taking place may be uncertain."

At the very least, biological information for a conservation plan consists of a survey to determine the spatial distribution and population size of the species in the planning area, as well as a summary of ecological information on the species. This must be done for species included in the incidental take permit, as well as species that will be included if they are listed in the future. This standard is contained in the HCP Handbook (FWS and NMFS 1996), where the services state that each plan must contain at least a survey of the permit area to determine the distribution of the species in the plan area (pp. 3-12).

Unfortunately, for some HCPs reviewed here, even the most basic requirement for a survey of the species was not fulfilled. For the Pacific Gas and Electric HCP that permits incidental taking of the California red-legged frog, there was no frog survey before the HCP was developed and implemented. For the Sarah Bradley HCP, "it isn't absolutely known how many salamanders live in the area." For the Clark County HCP for the Mojave desert tortoise, an estimated 111,000 acres will probably be developed under the HCP, but this land was not surveyed for desert tortoises. For these plans, we must conclude that the

amount of take under the plan was unknown. Moreover, neither plan caps the amount of take.

In the HCP Handbook, the services indicate that habitat assessments can replace population surveys: "Another approach to consider for HCPs is habitat-based HCPs in which the presence of a particular species can be assumed based on the presence of its habitat type; if that habitat type is then addressed in the HCP and included in the mitigation program, additional distribution studies may not be necessary" (FWS and NMFS 1996, pp. 3-12). This proposed approach ignores the considerable scientific uncertainty associated with using habitats to indicate the presence of vertebrate species (Edwards et al. 1996; Scott et al. 1993; Verner et al. 1986). When such uncertainty is combined with the already low populations of sensitive and listed species, there is great risk in estimating take through only assessing habitat.

No Biological Standards

The minimization and mitigation of take that occurs under conservation plans can vary considerably. Each type of conservation plan has different legal standards, although at rock bottom, the services cannot approve of actions that jeopardize the continued existence of listed species (FWS and NMFS 1996).

For HCPs, landowners must "to the maximum extent practicable, minimize and mitigate the impacts" of incidental take (ESA Section 10(a)(2)(B)(ii)). This "maximum extent practicable" has largely been interpreted by the services as what is economically acceptable to the permittee. This is bounded by a requirement that the

HCP cannot “jeopardize” the species through engaging in “an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of the species” (FWS and NMFS 1996).

This “practicability” standard has led to HCPs that vary widely in the extent to which mitigation occurs. In the HCP Handbook, the services recommend that “first and foremost, mitigation should compensate for habitat lost through the permitted activities of the HCP by establishing suitable habitat for the species that will be held in perpetuity, if possible” (FWS and NMFS 1996, pp. 3-23). This habitat mitigation could take different forms in order of preference:

Potential types of habitat mitigation include, but are not limited to: (1) acquisition of existing habitat; (2) protection of existing habitat through conservation easements or other legal instruments; (3) enhancement or restoration of disturbed or former habitats; (4) prescriptive management of habitats to achieve specific biological characteristics; and (5) creation of new habitats (pp. 3-22).

In practice, many HCPs include a variety of measures to minimize and mitigate take other than habitat preservation. These measures can result in a net loss of habitat if they are not accompanied by habitat restoration and preservation. Mitigation activities for plans in this report include (among other activities) payment of a fee in the event that incidental take actually occurs (e.g., Gross/Snow Construction), management prescriptions for certain parcels to become suitable habitat for species (e.g., Washington DNR), preserve acquisition or conservation easements on natural lands (e.g., Clark County), funding for research (e.g., Fel-Kran-

Plumbing) and funding the translocation of displaced animals (e.g., Coleman Company).

For the Gross/Snow Construction HCP, this plan permits construction of homes so close to a bald eagle nest that, according to the Biological Opinion from FWS, “Even with the minimization measures identified above, the service believes that abandonment of the nest site is likely” (p. 15). This plan contains almost no effort to minimize the impact to eagles by allowing home construction within a 250-foot-wide “buffer” for the eagle nest, and mitigation is a payment of \$25,000 if the nest is indeed abandoned.

Some HCPs contain virtually no mitigation measures because the minimization measures purport to avoid any take. This lack of positive protective measures can be inconsistent with recovery. For example, Sarah Bradley’s HCP is a timber harvest plan to avoid take of the Red Hills salamander, with no mitigation. It is troubling that the HCP states that “preservation of this prime salamander habitat is possible because of the sensitivity of the landowner to this conservation issue” (page 1). Sensitivity aside, preservation of that habitat is required under the ESA, and if incidental take may occur, it should be mitigated under the HCP. For the Massachusetts HCP for piping plovers, the HCP consists of tightly controlled opportunities for recreational activities that disrupt the plovers. This HCP aims to provide “greater flexibility” for activities on the beaches (including increased beach vehicular traffic) specifically because plover recovery is much better in Massachusetts than in any other state. While wildlife officials believe that the plan will not result in take, the HCP clearly does not benefit

the piping plover because there is no mitigation.

In contrast, for some HCPs, there does appear to be a net benefit for species. For the Black Hawk Pacific Gas and Electric HCP, the utility contributed a \$100,000 bond for California red-legged frog habitat. This was used to acquire and preserve double the affected acreage and the mitigation acreage was higher quality habitat adjacent to a protected area. (This may have occurred because there was haste to complete the HCP and no biological survey of the planning area was done.) Under the Brandon Capitol Corporation HCP, 3.75 acres of habitat on the edge of a Florida scrub jay territory was lost, but 7.5 acres of habitat was conveyed to the county, which would fill gaps between other protected tracts.

Nevertheless, in the absence of a mitigation standard that is biologically relevant instead of economically defined, competition between landowners can lead to plans that are successively more risky to species. This is most obvious in HCPs in the Pacific Northwest for the northern spotted owl. Over time, landowners have received longer permits for more species, with greater landowner flexibility in implementation agreements.

At this point, the services cannot demand that a landowner provide more mitigation than for previous HCPs in the same area. This is partially because the services encourage consistency between HCPs for the same species (FWS and NMFS 1996) and because landowners vigilantly watch what is required of other (competing) landowners. For example, in the latest HCP in the Pacific Northwest, the draft Weyerhaeuser HCP for the Willamette Timberlands, Weyerhaeuser

can terminate the HCP if the plan becomes too economically burdensome over time (discussed further under Implementation and Adaptability). If this is approved in the final HCP, it is likely that future landowners in the region will also receive this unprecedented economic assurance. This example illustrates that when landowners are in competition with each other, the mitigation standard becomes the lowest common denominator of what was required of previous landowners.

Prelisting Agreements and Candidate Conservation Agreements

Recently, under several prominent “prelisting” agreements (i.e., the conservation plans for coho salmon in Oregon, for the jaguar in southern Arizona and New Mexico and for the Atlantic salmon in Maine) there is a hope that the plans would prevent the species from being listed.

Unfortunately, there is no legal standard for these agreements, no legal enforceability for the plan, and no analysis of whether listing is necessary based on biological information, as is now required by law. In these plans, take is not prohibited because the species are not listed, and there is no minimization or mitigation standard.

For these situations, the services recently drafted a policy for developing candidate conservation agreements. Under this policy, the services may approve an agreement if it involves a program or plan that, if undertaken on a broad scale, would “remove the threat(s)” to the species and thus preclude the need to list the species. It is unclear how this standard will be interpreted both in practice and legally.

4(d) Rules

Under the ESA, a threatened species can have a “special rule” (called a 4(d) rule) that governs incidental take of that species (see box on How the ESA Works). This presumably provides for greater flexibility in land use and management for threatened species, as opposed to stricter protections for endangered species. Under the 4(d) rule for the Louisiana black bear, “normal forest management activities” are allowed, except for “activities causing damage to or loss of den trees, den tree sites or candidate den trees.” When the California gnatcatcher in southern California was listed as threatened in 1993, the 4(d) rule was constructed so that it allows incidental take that is consistent with the NCCP, as long as activities adhere to subregional plans or, in the interim, the conservation guidelines laid out by the scientific review panel.

For species with 4(d) rules, the special rule provides the boundaries for conservation plans or agreements that are developed. For example, for the Louisiana black bear, certain activities are prohibited, but habitat conservation is generally voluntary, and the Black Bear Conservation Committee has worked to coordinate and promote those voluntary conservation activities.

Natural Communities Conservation Program (NCCP)

The NCCP pilot program in southern California is a special case, because it involves take of endangered species, the 4(d) rule for the threatened California gnatcatcher and unlisted species. Under the state NCCP Act which created the program, there is no enforceable standard

for the level of minimization and mitigation that must occur, but according to the NCCP’s Conservation Guidelines, there can be “no net loss of habitat value” as defined by viable populations. In practice, this vague legal standard has resulted in plans that vary in terms of impact on species. Nevertheless, all plans within the NCCP must also comply with environmental laws with more specific standards, including the state’s Endangered Species Act, the federal ESA (Sections 7 and 10) and the California Environmental Quality Act. For federally endangered plants, protection standards are actually higher under the NCCP than under the ESA, because private landowners typically are not prohibited from taking listed plants.

In practice, the MSCP contains no specific biological standard for species to be included on the “covered species” list, and this list has been one of the most controversial aspects of that plan. For example, in the MSCP a list of 57 covered species was expanded to 85 species, even though the conservation plan was not significantly altered. Without the existence of a legal standard by which to judge whether a species is covered under the plan, the covered species list became a political football, subject to legal challenges. The fundamental problem was that planners started with a potential preserve system, then negotiated which species would fall under the “covered species” list on the basis of protection in those preserves. In retrospect, a better method would be to identify the species to be covered and then determine what protection is necessary for each of those species (this is the approach planners are using for a different subre-

gional plan in an area north of the MSCP).

Despite problems with biological standards for the covered species list, all federally listed species on that list must meet legal standards under the federal ESA. That is, incidental take must be minimized and mitigated to the maximum extent practicable, and the plan cannot result in jeopardy to the species' continued existence. Moreover, it is arguably easier to evaluate whether those standards are met under the MSCP, because cumulative effects to the species are easier to evaluate in a regional planning context than in numerous individual, small-scale HCPs.

The Role of State and Local Governments

The ESA is a federal law implemented primarily by FWS and NMFS (federal agencies), and HCPs are agreements between local landowners and FWS or NMFS. For a few plans reviewed here, however, the permittee is actually a government agency or a particular jurisdiction, and private landowners participate in the HCP through a program administered by the permittee (i.e., Massachusetts Division of Fisheries and Wildlife HCP for the piping plover; the Volusia County HCP for sea turtles). For other conservation plans, local jurisdictions and communities within the range of the species have worked together to develop a plan (e.g., the Louisiana Black Bear conservation program and the Atlantic Salmon Conservation Plan). In all of these cases, the status of the species of concern (whether it is listed as threatened or endangered) plays an essential role, because listing provides enforceable standards and adds the element of

federal oversight to a local plan. For example, in the MSCP, FWS approves and coordinates some aspects of the plan because the plan affects key listed species. In contrast, for the Atlantic Salmon Conservation Plan, the plan exists without a method to enforce compliance to the plan, because listing of that species has not occurred (see Box on The Importance of Listing).

One way of coordinating federal permitting and local implementation is to establish a programmatic HCP that allows a local government agency to implement an HCP with federal oversight. For several HCPs reviewed here (Balcones Canyonlands Conservation Plan, Georgia statewide HCP, Sandhills safe-harbor program, Massachusetts Division of Fisheries and Wildlife HCP), a local wildlife agency holds the incidental take permit, and it coordinates private landowner participation in the program established in the HCP. In other cases, the HCP allows the agency itself to carry out the HCP. For example, in the Volusia County HCP for sea turtles, the county is responsible for patrolling beach zones where vehicles are excluded. With regard to the Florida scrub jay and the Alabama beach mouse, FWS officials in the southeastern states have indicated that having programmatic HCPs for particular counties would provide an impetus for, and coordination of, conservation activities that currently do not occur. In fact, an HCP for Brevard County (where the Brandon Capitol Corporation HCP reviewed here is located) was being developed over a period of four years until there was sufficient turnover in the county commission for the county to no longer support the HCP. In Baldwin County, Alabama,

The Importance of Listing: The NCCP

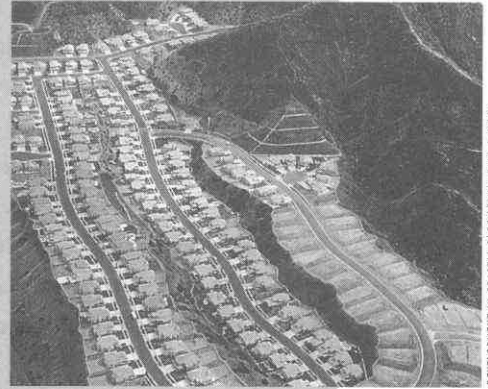
Whether conservation plans are in place for a species and its habitat or not, under the ESA there is a clear mandate that the decision about whether to list a species be made “solely on the basis of the best scientific and commercial data” (Section 4b). If a species continues to decline to an endangered level despite protection efforts through a conservation plan, it must be listed.

The NCCP for the coastal California gnatcatcher is a powerful example of the effect of listing on a conservation plan. The NCCP was created in 1991 by the state of California, and many people acknowledge that it was formed to prevent the impending listing of the gnatcatcher, a bird that relies on coastal sage scrub habitat in southern California. Coastal sage scrub coincides with areas that are prime for development, and this habitat type has been reduced to 10-15 percent of its original extent (Murphy et al. 1992; McCaull 1994). Participation in the NCCP was voluntary and variable until 1993, when the gnatcatcher was federally listed as threatened.

With the listing, the NCCP incorporated conservation guidelines that were developed by a scientific review panel (see #5, Independent Science).

These guidelines govern the amount and quality of take that is permitted for this threatened species while subregional plans like the MSCP are being developed (this is a special rule under section

4(d) of the ESA). For the NCCP, local governments help develop, implement and enforce each subregional plan, but these plans are developed in conjunction with state wildlife agencies and FWS, which must approve the plans under the ESA. Listing under the federal ESA was critical. It gave landowners an incentive to participate because they wish to ensure regulatory stability in current and future listings. Nevertheless, while plans under the NCCP include protection for some unlisted species, assurances to landowners do not include guarantees that imperiled species in the region will not be listed in the future.



DEVELOPMENT IN COASTAL SAGE SCRUB. REED F. MOSS

the HCPs for incidental take of the Alabama beach mouse have been criticized because of the potentially serious effects of multiple HCPs on the mouse's chance of recovery. A county-wide, programmatic HCP would help to provide an overall framework for addressing those cumulative effects.

For any HCP that involves planning for urbanizing areas, conservation planning involves

program development and implementation primarily through local jurisdictions, with final approval of the program resting with FWS or NMFS. A few HCPs reviewed here (the Metropolitan Bakersfield HCP, the Balcones Canyonlands Conservation Plan, the Multiple Species Conservation Program in San Diego County and the San Bruno Mountain HCP) illustrate some of the aspects of how local and ESA regulations

are integrated in urbanizing jurisdictions.

For the Metropolitan Bakersfield HCP, the plan was developed specifically to allow the general plan that was already in existence — the 2010 Plan — to comply with the ESA with regard to such listed species as the San Joaquin kit fox and the blunt-nosed leopard lizard. By requiring fees on development within the planning area, the HCP provides funds to acquire preserve lands mainly outside the planning area. The California Department of Fish and Game is integrally involved in development and implementation of this plan, as are the city and county governments. For all intents and purposes, the HCP operates through local government, which is responsible for implementing the HCP by enacting ordinances, administering the plan and collecting mitigation fees.

The interaction between the MSCP in southwestern San Diego County and city and county zoning regulations are much more complex. The planning area of the MSCP encompasses unincorporated county land as well as 11 municipalities, including the city of San Diego, Chula Vista and Coronado. Each jurisdiction has developed or is developing a subarea plan that is consistent enough with the overall MSCP and preserve design to be included in the MSCP. To achieve this, these local jurisdictions are responsible for making their land-use plans consistent with the MSCP and adopting implementing language. Each jurisdiction can use different mechanisms to achieve the general planning goals in the MSCP. For example, the city of San Diego has delineated preserve areas, whereas the county is implementing a Biological Mitigation Ordinance

regulating development projects based on the biological importance of the land in terms of core areas, linkages or presence of sensitive habitats. To coordinate the overall MSCP, an Implementation Coordinating Committee made up of federal, state and local government agency representatives has been established. Each jurisdiction must contribute financially to the plan, typically through a voter-approved revenue source.

Environmentalists are concerned that the MSCP could result in less protection for wetlands and for natural areas important to the local communities. For example, when the city of San Diego approved the MSCP, it weakened the city's Resource Protection Ordinance protecting wetlands. Under the MSCP, the definition of wetlands was much more restrictive, and the requirement for 100-foot buffers was eliminated. Fortunately, environmentalists were able to persuade the parties involved to change the definition back to the original and have a requirement of "functional" wetland buffers as part of the Land Development Code Update.

The power that counties and cities have in southern California contrasts sharply with the much more limited tools that Texas cities and counties can use to implement a regional HCP. In Texas, counties cannot pass ordinances or levy development permit fees as they can in California. As a result, there is considerably more flexibility for individual landowners within the planning area than in other urban HCPs reviewed here. In particular, local jurisdictions within Travis County are not required to participate in the plan. More importantly, none of the

landowners within the permit area are required to participate in the plan, and FWS and local governments may not condition approval of any development permit on participation in the Balcones plan. This leaves landowners with occupied habitat free to develop their own HCP, if it is less costly than participation in the overall plan. This is exacerbated by some local environmental consulting firms, which earn more money by negotiating individual HCPs that are less costly to their clients than if their clients participated in the Balcones plan. Recently, there has been grave concern that some of the landowners seeking their own permits are within the areas identified in the Balcones plan as future preserves.

Nevertheless, under the Balcones plan, the local and regional agencies do have other tools to carry out the HCP. The city of Austin is a home-rule governing body, so it may exercise any power authorized by its charter as long as it is not unconstitutional or contrary to the laws of the state. Travis County draws its authority to enforce the plan primarily from the Texas Parks and Wildlife Code, which authorizes regional planning. Municipalities and counties also have broad constitutional and statutory authority to issue bonds and levy taxes for purposes of acquiring and maintaining parkland. Finally, the Texas Interlocal Cooperation Act authorizes multi-agency agreements among political subdivisions to allow assignment of financial, management and enforcement responsibilities.

Many people believe that the NCCP in southern California is a model for the nation in environmental planning under the ESA, but it is extremely important to recognize that state and

local regulations in other states may not be nearly as effective for regional planning. Texas is a good example. Moreover, states vary dramatically in the state laws, regulations and incentives available for wildlife protection (Defenders of Wildlife, 1996). Because California has some of the strongest environmental laws of any state, any national program that would integrate federal and state regulations will be difficult to implement and is likely to be less effective than the NCCP.

The Role of Federal Lands

One potentially large advantage of conservation planning is the ability to coordinate planning among private and public lands to reduce habitat fragmentation and coordinate preserve systems. Obviously, planners must design conservation plan preserve systems in the context of habitat in the surrounding area, especially public land already set aside as wildlife reserves or for multiple use. Conversely, federal agencies are increasingly attempting to carry out ecosystem management on public land that ideally takes into account adjacent private land use, protects endangered species, and incorporates standard scientific procedures (Peters et al. 1997).

This coordination of private and public land use is particularly essential in areas with a complex matrix of federal and private lands. For example, coordination of habitat protection is vital in many regions of the West, where a checkerboard pattern of alternating private and public land ownership is the legacy of a railroad land grant program in the 1860s. In many other instances, the combination of public and private protection can be powerful. For example, for the golden-cheeked warbler in

Travis County, Texas, Balcones Canyonlands National Wildlife Refuge may eventually total 41,000 acres with an important warbler population that is linked to the birds on private land covered under the conservation plan. This refuge was established because the planning process for the Balcones Canyonlands Conservation Plan identified the land as key tract for protection.

Along with the trend toward more and larger HCPs, private landowners are increasingly making land exchanges with the federal government. Obviously, major land exchanges within an HCP planning area are either part of the HCP or require a major amendment to the HCP and/or the federal land management plan at issue. For the Plum Creek HCP, Plum Creek Timber Company and the Forest Service are completing negotiations on a land exchange in which the Forest Service may get (in return for comparable acreage) 40,000 acres of roadless lands slated for harvest under the HCP. This land exchange will require a major amendment of the HCP.

While it is entirely appropriate that land exchanges that reduce habitat fragmentation are allowed under HCPs and that preserves from private land complement public reserves (which are usually much larger), there is a disturbing trend in conservation plans for public land reserves to substitute for or subsidize private land conservation. This can result in an overall loss of essential habitat and reliance on public reserves that are insufficient for recovery.

Positive Examples

In some HCPs, the coordination of land management and preserved areas with endan-

gered species on public land has led to better protection for species. The Black Hawk Pacific Gas and Electric HCP essentially exchanges approximately five acres of California red-legged frog habitat for the acquisition of ten acres of prime breeding habitat adjacent to a national park. For the Brandon Capitol Corporation HCP, 3.75 acres of Florida scrub jay habitat was exchanged for the acquisition and protection of 7.5 acres of high-quality habitat in order to fill in gaps between parcels protected by the county for the bird.

Negative Examples

The preliminary draft of the Georgia statewide HCP sets up a program to encourage red-cockaded woodpecker conservation through safe-harbor agreements for landowners with woodpecker groups that are likely to be part of a larger population on federal land. For landowners with isolated woodpecker groups, however, habitat loss is likely to occur, because landowners will simply translocate groups to habitat that is already protected. Determination of whether groups are isolated will be based on a spatially-explicit, individual-based model.

For some HCPs in the Pacific Northwest, there is an attempt to coordinate management with the federal government for northern spotted owl populations, but this strategy is at the expense of much old-growth habitat on private lands. For the Washington DNR HCP, the Plum Creek Timber Company HCP and the Weyerhaeuser Willamette HCP, as well as other Pacific Northwest HCPs not reviewed here, the permittees are relieved of responsibility for some

nesting, roosting and foraging (old-growth) habitat for owls that do not provide “demographic support” for owls on late-successional reserves under the Northwest Forest Plan (that is, they are too isolated from those reserves). In these plans, this loss of protection for old growth is partially mitigated by the creation of dispersal habitat (not old growth) between reserves on national forest and BLM land. This partial abdication of non-federal landowners’ responsibility for old growth under HCPs relies upon spotted owl recovery primarily occurring on federal lands. But recovery on federal land is far from certain. In the Northwest Forest Plan, there is only an 83 percent probability of well-distributed spotted owl populations, and plan implementation is not guaranteed (FEMAT 1993).

For the Swan Valley Agreement, there is explicit cooperation among private and public land managers for grizzlies in the Northern Continental Divide Ecoregion. The agreement between Plum Creek Timber Company, the Forest Service and Montana Department of Natural Resources has brought Plum Creek to the table in terms of grizzly bear management, but the process has reduced the likelihood that management under the agreement will be adequate for the bear (see Management Techniques). Instead, Plum Creek is avoiding its duty to seek an incidental-take permit by developing an HCP, weakening grizzly protection on federal land in the planning area.

Finally, two plans evaluated here are examples of blatant abdication of conservation responsibility to the federal government. For the Coleman Company HCP in Utah, a colony of 116 Utah

prairie dogs will be displaced and translocated (for a fee) to BLM land. Unfortunately, this is not the only HCP that involves translocation of displaced Utah prairie dogs. For example, so do the Connel-Gower HCP and the Smead Manufacturing HCP. Second, the Ben Cone HCP allows relocation of all 12 red-cockaded woodpecker groups on Cone’s land to sites on private and public land, but does not require Cone to pay for acquisition of habitat and only requires minimal funds for habitat maintenance on those lands. The federal government bears the heavy financial burden of habitat protection. Not only will Ben Cone receive an incidental-take permit for all 12 groups of woodpeckers on his land sometime in the next 99 years, but he receives a *de facto* safe-harbor assurance for any additional woodpeckers that are attracted to his land during those 99 years.

Implementation and Enforcement

In this section, we explore the practicability and on-the-ground implementation of various plans and whether the plans can be enforced. Implementation and enforcement are intricately linked, because unenforceable plans can be more difficult to monitor and implement. Most important in much of this analysis of legal implementation and enforcement of HCPs is the incidental-take permit and/or the implementation agreement, because they contain explicit statements of landowner responsibilities.

Implementation and Practicability

Because most plans are new, it is difficult to evaluate whether plans developed in good faith

Fifteen Years of HCP Implementation: The San Bruno Mountain HCP

Because of the San Bruno Mountain HCP's relatively long history (it was the first HCP approved in 1982), it serves as an important example in the context of funding and implementation. While this HCP has proceeded roughly according to the original plan, there have been difficulties that could serve as lessons for new conservation plans.

In the San Bruno HCP, funding comes entirely from fees on development and annual fees from residents of those areas developed under the plan. As originally estimated, this would consist of three phases of raising money. First, landowners provided interim funding totaling \$50,000 per year (developers agreed to pay a monthly fee). Second, developer fees associated with construction were charged to pay for the monitoring of development activities and some habitat enhancement of areas disturbed during construction. Third, permanent funding for habitat enhancement and other HCP conservation activities comes from annual fees of \$20 per dwelling unit and \$10 per 1,000 square feet of non-residential development. From this funding, a trust fund was established, and the annual funding for habitat improvement comes from the trust. In the original HCP, an estimated \$60,000 per year would be available from this trust, which was to be sufficient for the goals of the HCP.

Currently, all of the development planned under the HCP is completed or under construction. There is approximately \$430,000 in the trust fund, and the interest from the trust is used for Thomas Reid Associates to carry out conservation activities each year. The trust itself is available for emergencies. In general the funding generated from development fees has fulfilled original financial expectations. Nevertheless, there have been



MISSION BLUE BUTTERFLY: EDWARD S. ROSS

difficulties over the first half of this 30-year HCP, and some people believe that there is inadequate funding to fulfill the biological goals of the HCP. Some charge that annual funding for habitat management has fallen well short of what is needed for adequate monitoring and removal of exotics. While enough money has been generated to fulfill the original financial goals of the HCP, no one realized how difficult and costly it would be to remove exotics and restore habitat.

In addition, there have been two visible examples of development projects proceeding in a different manner from that planned under the HCP. The first case involves the W.W. Dean Company's development on the South Slope. After the land had been cleared and graded, the company went bankrupt and the land was transferred to the Resolution Trust Corporation. For several years, the project was stagnant while erosion from the cleared area proceeded. Eventually the land was bought, and development is occurring now.

In another visible case, Southwest Diversified had planned to develop 1,250 units of condomini-

Continued

ums on the Northeast Ridge of the planning area at the outset of the HCP.

When a new Brisbane City Council was elected, however, the growth management policy was changed to restrict that development project. In addition, the housing market changed, and homes were in more demand than higher-density condominiums. As a result (and after a long battle), only 589 units were built, which required an amend-

ment to the HCP (approved in 1990). To correct for the discrepancy in funding for the HCP (which imposes fees per dwelling unit), the fee per unit was increased in this area. The development has finally proceeded again, but far behind schedule. Such delays in development have resulted in delayed development fees and annual fees, which has (somewhat ironically) set back funds for habitat restoration.

will be practicable and enforceable. Some plans are being implemented more smoothly than expected (e.g., the Metropolitan Bakersfield HCP). The San Bruno Mountain HCP has been implemented generally according to plan for 15 years, with some amendments (see box).

Some of the plans reviewed here may be difficult to implement because they are too cumbersome or costly for participating landowners. For example, during the first year of the two-year Massachusetts HCP for piping plovers, only one beach manager opted to use the HCP. Many other beach managers found the requirements for eligibility, compliance and monitoring too cumbersome to take advantage of the reduced restrictions on activities that threaten piping plovers. Other HCPs reviewed here contain provisions difficult for landowners to carry out and even more difficult for the services to enforce. For example, the Gross/Snow Construction HCP prohibits use of chainsaws or outdoor radios and bars revving engines during the nesting cycle of the bald eagle. In the Fel-Kran Plumbing HCP and the Fort Morgan Paradise Joint Venture HCP for residential development in Perdido Key and Alabama beach mouse habitat, residents of new homes cannot own cats, and there must be

control of free-roaming cats.

The draft Georgia statewide HCP for red-cockaded woodpeckers may also experience significant implementation difficulties. Under the preliminary draft of the HCP, the program consists of allowing landowners with demographically isolated groups of woodpeckers to take the habitat for the woodpecker groups and pay for translocation, while landowners with non-isolated groups participate in safe-harbor agreements. Yet, based on experience from the Sandhills safe-harbor program for red-cockaded woodpeckers in North Carolina, it will take a large commitment by the state to coordinate the program and have landowners participate. In the Sandhills area, 20 landowners have signed agreements and the program is running smoothly. It is clear, however, that the Sandhills program would not have operated effectively without (1) extensive efforts to inform landowners about the program; (2) the ability of landowners to get income from their land while maintaining the existing woodpecker groups; and (3) promotion of the program by key local landowners who are trusted in the community. For the safe-harbor portion of the Georgia plan, if these factors come together and landowners choose to take part in the HCP,

Implementing Agreements

Section 10(a)(2)(B) of the ESA authorizes the Secretary to obtain “such other assurances as he may require that the plan will be implemented.” This provision provides the Secretary with the discretion to require a permit holder to sign an Implementing Agreement as a condition of receiving an Incidental Take Permit. The Handbook defines an Implementing Agreement as:

An agreement that legally binds the permittee to the requirements and responsibilities of a conservation plan and section 10 permit. It may assign the responsibility for planning, approving, and implementing the mitigation measures under the HCP.

The Handbook outlines several elements that may be included in an Implementing Agreement. These include: (1) defines the obligations, benefits, rights, authorities, liabilities, and privileges of all signatories and other parties to the HCP; (2) assigns responsibility for planning, approving and implementing specific HCP measures; (3) specifies the responsibilities of FWS, NMFS or other state and federal agencies in implementing or monitoring the HCP’s conservation program; (4) provides for specific measures when habitat acquisition, transfer, or other protections are part of the HCP’s mitigation program; (5) establishes a process for amendment of the HCP, where necessary; and (6) provides for enforcement of HCP measures and for remedies should any party fail to perform on its obligations under the HCP.

An Implementing Agreement can provide benefits to the permit holder, Secretary and species covered under the HCP. For the permit holder, an Implementing Agreement can provide additional assurances that the agreed-upon procedures will be followed for changing the conditions of the permit

or the mitigation requirements. The Secretary may obtain additional assurances from the permit holder that he or she will comply with the terms and conditions of the HCP. An Implementing Agreement can also extend responsibilities under the HCP beyond the life of the permit and secure perpetual protection of lands set aside as mitigation, thus helping to ensure the long-term protection of covered species. Although the decision of whether to require an Implementing Agreement is discretionary, the Handbook provides that they are not done for low-effect HCPs unless requested by the permit applicant.

Because it can be tailored for the HCP in question, can be more detailed than the permit conditions, and can secure the consent of each party to abide by the terms of the HCP, an Implementing Agreement should be required for most plans. However, Implementing Agreements may also create potential problems. For example, the draft Implementing Agreement for the proposed Weyerhaeuser HCP in Oregon contains controversial provisions that would allow Weyerhaeuser to negotiate amendments to the HCP “to avoid impracticable economic burdens” or “to respond to major casualty losses.” These provisions would essentially allow Weyerhaeuser to avoid or reduce its mitigation obligations under the HCP where changes in circumstances make it economically impracticable or unprofitable for the company to comply with the original terms of the plan. This type of provision clearly could undermine the long-term conservation benefits of the plan by forgiving mitigation requirements determined under the original terms and conditions of the HCP to be necessary to avoid jeopardizing the continued existence of any listed species.

many of the HCP activities will be labor-intensive for wildlife agencies (i.e., translocating woodpeckers and monitoring to assure that baseline responsibilities are met), and the capacity of those agencies will need to expand to meet those responsibilities.

In another example, there is speculation that it will be difficult to implement the Washington DNR HCP for the full term of the agreement (70 to 100 years). In the spring of 1997, the legislature approved a bill that would have transferred management responsibility of nearly half of DNR-managed lands to particular counties. If the governor had not vetoed the bill, this would have seriously undermined the HCP by removing large tracts of land from the planning area. In the HCP, there is ample opportunity for DNR itself to sell off parts of the planning area. Under the implementation agreement, DNR can sell HCP lands without approval from the services. The conditions of the HCP do not necessarily accompany the land transfer, but DNR has the option of including the permit and the associated HCP responsibilities with the land if this increases the land's value. The services cannot require replacement mitigation until DNR sells so much land that the services can determine that it constitutes extraordinary circumstances.

Compliance Monitoring and Enforcement

In general, there has been little emphasis on enforcement mechanisms if permittees do not fulfill their obligations under conservation plans or if permittees want to duck out of agreements that become too economically disadvantageous.

In part, this is because FWS does not want to act as a regulatory enforcement patrol that threatens to revoke permits and imposes stiff penalties. Indeed, this reluctance to clash with economic interests is one of the driving forces behind the development of conservation plans and the services' attempts to replace regulation with contractual agreements like HCPs. This permitting system arguably has outstripped biological information necessary for designing and approving plans (especially when HCPs rely on management techniques that are still experimental). Once those permits are issued, however, it is important that legal enforcement measures are clearly articulated in order to promote compliance with the issued permit.

It is generally understood that if permittees do not carry out their responsibilities under the HCP, the incidental-take permit will be revoked and further mitigation may be required. For more complex plans, however, it is extremely important that implementation agreements clearly define what specific circumstances constitute unacceptable deviation from plan requirements, what preliminary measures could be taken to address noncompliance (e.g., dispute resolution), under what circumstances the services can suspend or revoke permits, and what mitigation may be required upon permit revocation.

Adequate legal enforcement hinges on on-the-ground compliance monitoring, ultimately the responsibility of the services. From the services' HCP handbook (FWS and NMFS 1996) and the HCPs reviewed here, the typical approach is for the services to require annual reports detail the amount of take (in individuals

or habitat) that has occurred in the past year and cumulatively since the plan began and the conservation activities carried out under the plan. These annual reports amount to self-monitoring by the permittees, although requiring landowners to report on their activities is a significant step toward ensuring that they carry out their responsibilities. On paper, the services check annual reports to make sure that permittees are in compliance on paper, but it is unclear how much on-the-ground verification of compliance is feasible. It varies with the funding available and number of HCPs for each office.

Aside from HCPs, enforcement is largely absent for other conservation agreements. Under the Swan Valley Agreement, for example, compliance by Plum Creek Timber Company is not enforceable in a court of law, and any party (including Plum Creek Timber Company) can withdraw from the agreement at any time, making the agreement essentially voluntary. In addition, no annual or periodic reports are required of Plum Creek. The Atlantic Salmon Conservation Plan was developed under the auspices of a pre-listing conservation plan that would preclude the need for listing. Although the plan contains a long list of actions that would be useful for Atlantic Salmon recovery, these activities are voluntary because the species is not listed. For the Louisiana black bear, the species is listed as threatened, but the 4(d) rule prohibits only “activities causing damage to or loss of den trees, den tree sites or candidate den trees.” This 4(d) rule, combined with the fact that critical habitat has not been designated for the species, results in lack of enforcement of habitat protection for the bear.

Plan Duration, Changes and Termination

Adaptability

Since 1994, the no-surprises policy has specifically insulated private landowners (including many large corporations) from additional financial or land obligations that the services may deem necessary for conserving listed species (see box on “No Surprises”). When this unprecedented and complete assurance has been granted to landowners, any plan changes at a later date must occur within the bounds of the original plan’s budget and land-use restrictions. But landowners can make plan changes that can economically benefit the landowner or result in less protection of undisturbed areas, provided those changes are consistent with biological objectives for listed species. For example, in Pacific Northwest HCPs there is no opportunity for timber companies to set aside additional old-growth reserves. But if the companies develop techniques to cut timber while recreating old-growth conditions necessary for northern spotted owls, those techniques may be incorporated in the plan. Nevertheless, there are some HCPs with limited opportunities to incorporate adaptive management and to make changes in the plan during implementation, even though those changes may be more costly. Here, we focus on HCPs for the Pacific Northwest, in which management under HCPs for the next 50 to 100 years is being designed in the midst of considerable scientific uncertainty and political tension.

The Washington DNR HCP is exemplary in its phased approach, where research is emphasized for the early phase of the HCP so that

management decisions can be based on that targeted research. Washington DNR recognized that such adaptive management would not be possible under the no-surprises legal assurances. Therefore, the implementation agreement of this HCP designates ten specific subject areas of research in which the results will be incorporated in management, whether or not that might result in DNR having to provide additional (potentially costly) protections. For example, if DNR research into the downstream effects of timber harvesting along non-fish-bearing streams reveals that riparian buffers are necessary along those small watercourses, buffers may be imposed. This is potentially very costly for Washington DNR. Nine other areas of adaptive management are outside no-surprises assurances, including changes based on refined habitat requirements for marbled murrelets, additional measures prescribed by watershed analyses and modifications of the road management program.

The Plum Creek Timber Company HCP in Washington also offers opportunities for making some changes in management, although this is more limited than the Washington DNR provisions. The implementation agreement discusses “adaptive management practices that may involve, within prescribed limits, additional mitigation beyond that specifically addressed in the HCP” (p. 386, draft HCP). In this context, Plum Creek Timber Company identified three areas that may require modifications of the HCP based on monitoring for watershed analysis, for the spotted owl management strategy and for riparian management (Section 5.4). Additional restrictions are provided for in the

implementation agreement:

Changes in operational or management prescriptions resulting from watershed analysis, aquatic monitoring as it was designed to support watershed analysis, and other adaptive management as addressed in Section 5.4 of the HCP are neither Unforeseen nor Extraordinary Circumstances even though such changes may require more or less restrictions on operations than were provided for under the original HCP (Section 8.0(b) of IA).

Of course, this adaptive management does not address uncertainties in the basic conservation strategy of the HCP. In addition, this adaptive management is based on monitoring and analysis conducted by Plum Creek Timber Company, and adaptive changes may well result in fewer costly management restrictions than under the original plan.

In contrast, the draft Weyerhaeuser Willamette HCP allows unprecedented flexibility for Weyerhaeuser to make changes if conservation activities under the plan become too cumbersome. Weyerhaeuser “may request the services to approve HCP amendments to better balance economic costs against biological benefits” (p. 6-14, draft HCP). In negotiating such amendments with the services, Weyerhaeuser has tremendous power, because it reserves the right to terminate the HCP if it becomes too burdensome economically. The services may also propose amendments to the HCP, but any amendment cannot violate the no-surprises policy.

Plan Duration and Termination

The duration and potential for early termination of long plans are essential aspects of plan

feasibility. For example, for HCPs in the Pacific Northwest, permits are for long periods (50 to 100 years), because the habitat benefits of mitigation activities will not occur for many decades. In contrast, without a biological basis, permits for 99 years are being granted for all of the HCPs reviewed here that involve incidental take of red-cockaded woodpeckers (Ben Cone, Sandhills and Georgia statewide), and for the Gross/Snow Construction HCP for take of the bald eagle. For these HCPs in the Southeast, this permit length greatly exceeds any mitigation requirements. Instead, the length of the permit is meant to provide the landowners with maximum flexibility regarding when to take the animals on their land incidentally.

In cases where incidental-take permits are extremely long, provisions for landowners to terminate the HCP early become very important. In particular, for HCPs where take could occur up front but mitigation benefits are not realized until the end (e.g., HCPs in the Pacific Northwest), there must be provisions in the implementation agreement about early termination to ensure that the conservation benefits of the plan are realized. While the implementation agreements of HCPs generally have a provision for early termination, there is not always specific language about what may be required if that early termination would adversely affect the species. Obviously, termination of the HCP results in termination of the incidental-take permit. This represents no threat, however, for permittees that accomplish all of the incidental take during the first phase of the HCP.

The worst example of early termination pro-

visions is in the draft implementation agreement for the Weyerhaeuser Willamette HCP. Under Section 6.4.3 of the HCP, Weyerhaeuser emphasizes that economic practicability of the HCP will change over time. The HCP states that “if the costs of implementing this HCP become unreasonable in relation to its economic benefits, Weyerhaeuser might have to terminate the incidental take permit unless either: new technologies become available, or this HCP is modified to reduce the economic costs” (pp. 6-13). This is the only HCP we reviewed that considered that mitigation would be “to the maximum extent practicable” throughout the length of the agreement. Moreover, this threat of early termination by Weyerhaeuser constitutes a trump card that Weyerhaeuser can use in negotiating for amendments to the plan to make the plan less economically burdensome.

In the Washington DNR HCP, “DNR reserves the right to terminate for any reason... with thirty days written notice to the Services” (p. 27, IA). The services may require mitigation for take that had occurred, as long as that mitigation is on permit lands and does not extend beyond the time frame of the HCP. This applies to unlisted species (e.g., salmon) as well if the services can demonstrate that termination would adversely affect the species.

In the MSCP’s model implementation agreement, a local jurisdiction can unilaterally withdraw from the agreement but in so doing surrenders incidental-take permits for future activities. The jurisdiction is still required, however, to carry out its agreed-upon mitigation for the take that occurred up to that point, and it must con-

tinue to have monitoring and management of established preserves. Withdrawal by one or more local jurisdictions may affect the take permits of other jurisdictions, but this appears to be discretionary even though conservation of some species is dependent upon cooperation and conservation actions by many jurisdictions. Moreover, it appears that with the phased implementation of the overall plan, the failure of one local jurisdiction to implement the MSCP will not affect other jurisdictions' rights or obligations.

There appears to be no standard policy about

the federal rules or regulations that are in place at the time of early termination. For example, in the Plum Creek HCP, either Plum Creek Timber Company or the services may terminate the HCP early in accordance with the regulations at the time of termination. Plum Creek Timber Company reserves the right, however, to terminate early in accordance with the regulations in place when the HCP was developed (including the no-surprises policy). This ensures that the company can end the agreement under the current favorable regulatory climate for large landowners.