CHAPTER 10

FISHY SCIENCE

From: Mooney, C.C. 2005. The Republican War on Science. New York, Basic Books

EARLY ON A SATURDAY MORNING in July 2004, a double rainbow spans the sky above the drowsy southern Oregon town of Klamath Falls. With a population of less than twenty thousand lodged between the pelican-dotted Upper Klamath Lake to the north, the bald-eagle-patrolled Klamath River to the south, and the eastern Cascades, Klamath Falls can seem a rather meager outpost of humanity in a far more overpowering natural landscape. But not today. Riders dressed in cavalry garb have gathered near the mouth of Lake Ewauna, which narrows into the Klamath River as it begins its 250-mile flow through lower Oregon and northern California to the Pacific. A crowd of more than a hundred irrigation farmers and their families have arrived to join the cavalcade. The demonstrators tote signs and posters—"ESA = Flawed Science," a typical one reads, in disparagement of the Endangered Species Act. Bush-Cheney 2004 campaign stickers adorn their truck bumpers.

It is just seven o'clock, but the farmers have gathered to relive a dramatic event of the year 2001. Faced with drought conditions and a court order, the U.S. Bureau of Reclamation shut off irrigation water—channeled from Upper Klamath Lake and other sources to more than two hundred thousand acres of agricultural land in the Klamath basin—to protect a white-bellied bottom-dwelling fish called the shortnose sucker, the related Lost River sucker, and a genetically distinct variety of the coho salmon. Long in coming, the crisis flowed inevitably from the fact that a wide range of interests in the Klamath region—farmers, Native American tribes, wildlife refuges, and finally, fish—all find themselves fighting over too little water.

The shutoff marked the first time that the Endangered Species Act had forced a dramatic withholding of water from a federal reclamation project (the Klamath project dates back to the early 1900s). It triggered immense anger over the government's decision, which was perceived to elevate the concerns of fish over those of farmers. "We lost our way of living," declares Al King, a Republican Senate candidate dressed in a tie, blue jeans, and cowboy boots who has come to address the assembled marchers. In 2001, the Klamath irrigators even engaged in civil disobedience, opening the Bureau of Reclamation's "A Canal" headgates and releasing water downstream. The government spent much of the summer—and an estimated $750,000—guarding the canal. In today's procession, a woman's T-shirt, reading "Headgate Stand, July 4, 2001," recalls the drama of those days.

But the mood this morning seems more subdued, perhaps because after 2001, the Bush administration has striven to ensure that Klamath farmers continue to receive their water. Following King's speech, the irrigators listen to a prayer, sing "God Bless America," and begin their march through the city center. Their destination: the Ross Ragland Theater, where the Republican-controlled House of Representatives' Committee on Resources has staged a field hearing on the Endangered Species Act and the Klamath irrigation project. The event will galvanize political support for a bill introduced by Greg Walden, the Republican congressman who represents Klamath county, called the Sound Science for Endangered Species Act Planning Act of 2003. Just days after the hearing, the Resources Committee will pass Walden's bill and send it to the House floor, in the process renaming it the Endangered Species Data Quality Act of 2004.

As this language hints, the Klamath dispute is no typical ESA fight pitting environmentalists and uncharismatic species against angry landowners. Since 2001, the battle has taken a new turn, with an emphasis on science. In late 2003, the National Academy of Sciences completed a

two-part review of the scientific underpinnings of the water shutoff, concluding that there wasn't strong scientific evidence supporting some of the more controversial actions proposed to help the fish. Agricultural interests and their conservative allies, who have been shouting "junk science" from the beginning of the controversy, now hold up the Klamath debacle as proof that many ESA decisions lack scientific justification and that the act itself needs science-based reform.

Yet the anti-ESA rhetoric emanating from the Klamath farmers—one memorable sign that I saw read, "Tame the raging bull . . . castrate the ESA"—suggests a very different agenda. In fact, hundreds of wildlife scientists have pointedly criticized the ESA "sound science" reform campaign on specifically scientific grounds. And in response to allegations that the Bureau of Reclamation's decision to withhold water from farmers had a foundation in "junk science," two scientists from the NAS's Klamath committee have countered that "we credited federal biologists for using the best information they had available at the time." In other words, the NAS's work had been misrepresented.

The Endangered Species Act "sound science" push represents just one more front on which conservatives have sought to interfere with the processes and results of science, in this case to block species protections unpopular with their libertarian-leaning Western constituents (and the farming, logging, development, and other industries and interests they represent). On ESA issues ranging from the protection of Pacific Northwestern salmon to the role of human activity in causing species extinction, conservatives have yet again twisted and misrepresented science to achieve political goals—goals they had already failed to attain through widely unpopular (but much more honest) assaults on the ESA itself.

Passed overwhelmingly by Congress in 1973 and signed by Richard Nixon, the Endangered Species Act was deliberately written to be tougher than two previous laws that had failed to curb extinctions. The new legislation embodied an activist desire to prevent the loss of *any more* species. As a report of the House Committee on Merchant Marine and Fisheries put it at the time: "Who knows, or can say, what potential cures for cancer or other scourges, present or future, may lie locked up in the structure

of plants which may yet be discovered, much less analyzed? . . . Sheer self-interest impels us to be cautious." Elsewhere, the committee wrote of endangered species that the "value of their genetic heritage is, quite literally, incalculable."

Citing such comments, the U.S. Supreme Court described the ESA as "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation" in the landmark 1978 case *Tennessee Valley Authority v. Hill.* In fact, the law turned out more "comprehensive" than some had apparently realized. In *TVA v. Hill,* the court notoriously affirmed a lower court's ruling that the nearly finished Tellico Dam project must be permanently halted to protect a tiny fish called the snail darter: Preserving an endangered species trumped all other priorities. Congress quickly reined in the ESA with amendments that brought other factors (especially economic ones) into play, and provided an explicit exemption so that work on the dam could continue. (Ironically, critics noted that from a cost–benefit standpoint, the dam was a highly dubious project.)

Yet despite these reforms, the ESA remains the "pit bull of environmental laws" and the weapon of choice for pro-environment litigants, who have used it for purposes extending far beyond protecting species. In the famous case of the spotted owl fifteen years ago, the bird served as a legal surrogate for another environmental aim: protecting the Pacific Northwest old-growth forests in which the owls live. "It's the most effective, substantive law that we've got for helping out the biota," says Holly Doremus, an ESA expert at the University of California, Davis, School of Law.

That may explain why since 1973, as environmental issues have grown fiercely contested, the ESA has made so many enemies. At the Klamath event in July, speaker Elliot Schwarz, of a group called the Rural Resource Alliance, even dubbed the act a "weapon of mass destruction in the hands of the eco–al Qaeda," a line that drew copious applause from the Klamath farmers. After all, the ESA ties the hands of developers, loggers, ranchers, farmers, federal agencies—pretty much anyone whose designs on a particular piece of property may be hampered by the flora and fauna residing there.

Over the years, many conservatives have attempted to dismantle or undermine the ESA. During the heady days of Newt Gingrich's tenure as Speaker of the House, Republicans crusaded for reforms that would have largely stripped the act of its potency, leading to pitched battles with environmental activists (dubbed "waffle-stomping socialists out to destroy the Constitution" by one GOP ESA reformer, Alaska's Don Young). The Gingrich Republicans' ESA reforms failed, however, and the act has gone without significant amendment since 1982.

The Right hasn't given up, though. Instead, just as they have done in other areas, conservatives have veiled their latest attacks on the ESA by claiming that they are acting on behalf of science. Instead of challenging the act itself, they have cleverly questioned its methodological underpinnings. The past decade has seen an increasing number of science-based legal challenges to ESA decisions, and explicit "sound science" laws, which have also gathered momentum over the past few years, could open up a brand new legal battleground, which is probably one objective of the proponents of such laws. The strategy, advanced by many of the same political actors who once argued for all but repealing the current ESA outright, turns on a seemingly earnest desire to improve the law's implementation, which everyone agrees would grind to a halt without good scientific analysis.

Science plays a central role in the ESA. Repeatedly, the act's text requires that actions taken—species listings, moves to protect listed species, and so on—rely on "the best scientific and commercial data available." Most evidence suggests that agencies have faithfully followed this mandate. In a 1995 report, the National Academy of Sciences failed to uncover "any major scientific issue that seriously hinders the implementation of the act." Similarly, a 1996 report by the Ecological Society of America noted that government scientists charged with ESA implementation "generally try to use the best scientific information and methods available." Failures on this front, the report continued, are "generally due to inadequate budgets and overworked staff."

Even studies requested by "sound science" proponents haven't backed up their concerns. A 2003 report from the Government Accountability Office (GAO) concluded that Fish and Wildlife Service listing decisions were "generally based on the best available science" (though problems existed when it came to the adequacy of data used to support designations of "critical habitat" for species). The GAO report had been requested by several Republican congressional leaders, including House Committee on Resources chairman Richard Pombo, a Californian who had once coauthored a book, *This Land Is Our Land*, harshly criticizing the ESA. Pombo's "property rights" screed likens the environmental movement to communism and absurdly claims that leaving "nature" free of human interference will itself trigger a decline in biodiversity because "some species tend to dominate others." Pombo has backed his colleague Greg Walden's "sound science" bill.

But if major studies fail to show a problem with the scientific basis for enforcement of the Endangered Species Act, why are conservative "sound science" proponents trying to remedy a nonexistent crisis?

A look at Walden's "sound science" bill—which, the congressman announced in March 2005, he plans to reintroduce—helps clear up the mystery. Since we already know that "sound science" describes a *policy* agenda to require a higher burden of proof before the government can take action, it will come as no surprise that the bill demands added vetting of the relevant science before Endangered Species Act enforcement can occur. Walden, in fact, belongs to the House Western Caucus, which (as noted previously) has explicitly stated that "environmental laws should be made with great caution and demand a high degree of scientific certainty." Although ostensibly a science-based reform, his proposed law did not arise from advocacy on the part of wildlife scientists. Rather, its champions have been libertarian-leaning Western Republicans and conservative Democrats sympathetic to farmers, ranchers, and developers who have a serious ax to grind against the ESA.

These sympathies shine through in the proposed law itself. As one of its central tenets, the Walden bill would require scientific "peer review" before virtually any ESA action could be taken. When it comes to the survival of either species or communities, Walden asked rhetorically during the 2004 congressional hearing in Klamath Falls, "Why in the devil wouldn't we ask for peer review so that we get it right?"

This argument fails for the same reason that the case for government-wide "peer review" under the Data Quality Act does. Peer review represents a hallowed scientific institution, and no one could possibly oppose it in a general sense. However, Walden's question elides a key distinction that has been highlighted by Harvard science policy scholar Sheila Jasanoff. We shouldn't confuse peer review of curiosity-driven science to be published in a journal with peer review of science used to make a government regulatory decision, Jasanoff argues. For example, in regulatory decision-making, added layers of review could create delay and red tape, effectively thwarting the ability of regulators to do their jobs (such as protect threatened wildlife).

And when it comes to the protection of endangered species, "peer review" faces another hurdle. In many cases, a very limited number of scientists actually possess the requisite expertise about a particular rare species. As a Congressional Research Service report on "sound science" and the Endangered Species Act noted, "There may be few (or no) people in the world knowledgeable about some species, and these specialists often have other duties and may not be available (or willing) to serve governmental regulators—in some cases constituting peer review panels could be difficult." The "sound science" legislation, however, proposes no way of dealing with this hurdle.

Joining in the tradition of Gingrich-era regulatory reform proposals, the "sound science" bill also attempts to legislate the definition of science itself. In order for agencies to take action under the ESA, the law wouldn't merely require them to use the best "scientific and commercial data available"; rather, the legislation would require that agencies "give greater weight to scientific or commercial data that is empirical or has been field-tested or peer-reviewed." The law also mandates that decisions to list species under the act must be supported by "field data."

Wildlife scientists read this language as a stealth attempt to undermine one of the most reliable techniques they have for understanding the vulnerability of species: population modeling, which projects species and ecosystem data into the future, and is thus neither exclusively empirical nor field-tested (though the initial data have to come from nature or the field). "When they start saying, 'You've got to give preference just to 'field-tested,' 'peer reviewed,' that is a total misrepresentation of how science goes," says Gordon Orians, a biologist at the University of Washington, Seattle, who chaired the National Academies' Board on Environmental Studies and Toxicology when it impaneled the Klamath review committee. "If you're going to say, 'We can't use models,' you might as well shut down the scientific enterprise," Orians continues.

The indirect attack on population modeling runs parallel to the attack on climate models by House Republicans during the Gingrich years. In each case, mainstream science relies on such models while fully disclosing their imperfections. Conservatives, seeking to derail inconvenient scientific findings, then cleverly target the models because of their well-known shortcomings. But unless conservatives are willing to rule out the use of *all* models in all fields (including economics), the criticism smacks of hypocrisy. Stuart Pimm, a conservation biologist at Duke University, notes that "the population models that we use, that have a lot to do with predicting whether a species will go extinct or not, are essentially the same as the models that people are using to investigate whether a smallpox outbreak would spread if some terrorist arrived in New York and tries to spread smallpox." One has heard no objection to the use of models in *that* instance.

The "sound science" bill has still other flaws. Orians adds that precisely because endangered species are so rare, it is hard to collect enough data on them to publish in the peer-reviewed literature in the first place. Walden's "sound science" proposal thus seems crafted to rule out precisely the sorts of information needed to protect a species before it is too late. The law also contains a double standard: There is no call for more stringent science in species *de*listings, though much higher hurdles are created to get species listed in the first place.

In yet another objectionable move, Walden's bill would mandate that agencies planning to list species consider data submitted by landowners (of the "I saw this bird in my field today" variety). Yet such anecdotal data would hardly have undergone scientific peer review. The shifting playing field suggests something much further from honest ESA reform and much closer to sabotage. "If you look at, in detail, what they're proposing, it can't be honest," says Orians.

Finally, adding insult to injury, the ESA reform would demand that in any case in which the current law required the use of the "best scientific data available," such data would also have to comply with the Data Quality Act. This provision appeared only in the latest version of the "sound science" bill, but the Bush administration has itself endorsed a previous incarnation of the current legislation. This campaign to eviscerate the ESA is not limited to Republicans in Congress; it finds sympathy in the White House.

The Walden bill clearly aims to slant the process of government science to attain a political result. And "sound science" proponents abuse science in another way in the high-profile Klamath case. They misrepresent the findings of the National Academy of Sciences panel that studied the Klamath fishes, spinning the group's reports into "proof" that the ESA's science provisions need fixing. At the 2004 Klamath Falls hearing, conservative Republican Wally Herger, who represents Klamath Basin irrigators in Northern California, claimed that the NAS's work had "vindicated" farmers, calling the science used to justify the 2001 water shutoff "fundamentally wrong." Yet as I learned from interviewing them, NAS report authors repudiate such an interpretation.

In making its controversial decision to withhold water from Klamath farmers in 2001, the Bureau of Reclamation relied on opinions about the relevant biological science from two other government agencies, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the agencies that had listed the Klamath fish species as endangered or threatened to begin with). In late 2001, the NAS assembled an expert panel to determine, after the fact, whether the emergency actions taken during the drought had been scientifically justified. The review marked the first time ever that an outside body had rigorously examined the scientific basis for an ESA decision after the fact.

As requested, a hastily assembled 2002 interim report by the NAS committee, produced after just four months, appeared to confirm what many landowners already suspected—that the decision to maintain higher water levels in Upper Klamath Lake to protect the suckers, and higher flow levels on the Klamath River main stem to protect the coho, lacked a "sound scientific basis." The committee couldn't find a simple, clear link between lake water levels or river flow and the welfare of the fish.

These results were widely trumpeted, not least by farmers. Bush's Interior secretary, Gale Norton—who in her previous job as attorney general of Colorado once argued that the ESA was unconstitutional—dashed off a press release citing the "weaknesses" the NAS had discovered and remarking ominously that the study "will affect our decision-making process for this year and future years." Soon, the Klamath became Exhibit A in the conservative case for ESA reform. In congressional testimony defending his "sound science" bill in early 2004, Greg Walden said of his Klamath constituents, "I challenge anyone to find a group that has been more negatively affected by the inadequacy of the science used in making decisions under the Endangered Species Act."

Yet after issuing their final report in late 2003, members of the expert NAS panel lashed back at what they considered a misinterpretation of their preliminary analysis of the previous year. The committee's final report explicitly repudiates the spin put out by conservatives, noting,

> The listing agencies have been criticized for using pseudoscientific reasoning ("junk science") in justifying their requirements for the protection of species in the upper Klamath basin. The committee disagrees with this criticism. The ESA allows the agencies to use a wide array of information sources in protecting listed species. The agencies can be expected, when information is scarce, to extend their recommendations beyond rigorously tested hypotheses and into professional judgment as a means of minimizing risk to the species.

As committee member J. B. Ruhl, a legal scholar at Florida State University and ESA expert, explained to me, "A lot of people started screaming about 'junk science' after our interim report. And they just have no appreciation of what's going on."

It is important to remember, says Ruhl, that most ESA decisions will not be scrutinized as exhaustively as the Klamath decision. The review panel had a $685,000 budget and over a year to reanalyze a decision that had to be made quickly. And while the Klamath committee did find that

there was "not sufficient scientific evidence to support what the agency did," Ruhl continues, "we never said what they did was a bad decision."

The distinction is crucial: In the face of scientific uncertainty and insufficient evidence, the agencies exercised their professional judgment about how best to protect endangered species. Both the interim and final Klamath reports note that there was also no good scientific evidence to support the notion that *lower* water levels in Upper Klamath Lake and on the river, as had originally been proposed by the Bureau of Reclamation to help farmers, wouldn't hurt the fish. There wasn't a lot of good evidence to go around, period, and the agencies did the best they could. They certainly didn't abuse science in any way. "The agencies are generally justified in making decisions on very limited data, and that's a far cry from saying it's 'junk science,'" says NAS committee member Peter Moyle, a fisheries expert at the University of California at Davis.

At the 2004 hearing in Klamath Falls, NAS committee chairman William Lewis, a University of Colorado limnologist, echoed Ruhl's argument about "professional judgment" in the face of inadequate evidence. Moyle has also set the record straight, clarifying that using the NAS's work as an excuse for revising the ESA has no justification. In an op-ed article published following the release of the Klamath committee's final report in 2003, Moyle and fellow committee member Jeffrey F. Mount, a University of California at Davis geologist, declared that "in the Klamath basin the Endangered Species Act (ESA) is working as intended when President Nixon signed it into law 30 years ago."

Clearly, conservatives have severely misrepresented the NAS's Klamath report and its implications. What's more, the NAS's interim report has itself come in for scientific criticism. Douglas Markle, an expert on endangered suckers at Oregon State University in Corvallis, coauthored a 2003 paper in the journal *Fisheries* suggesting that the NAS had unwisely looked for overly simple connections in a highly complex ecosystem. Markle and his coauthor called the Fish and Wildlife Service's original biological opinion on the suckers "more rigorous, thorough, and defensible" than the NAS Interim Report. Whether you side with NAS or its scientific critics, though, you still won't wind up with the conservative take on the Klamath.

Further developments also seem to have vindicated, at least to an extent, the original instincts of the federal agencies charged with protecting species. In September 2002, after the Bush administration stepped in to ensure a copious supply of water to farmers, the Klamath River witnessed a dramatic downstream fish kill in which at least thirty-three thousand salmon—largely wild Chinook but among them a number of endangered coho—died. Markle explains that the fish kill resulted from a "perfect storm" of ecological factors—including low river flow levels, warm water temperatures, and a high salmon run—with no one factor decisive on its own. Still, a 2004 analysis by the California Department of Fish and Game centrally highlighted the role of irrigation diversion, noting that "flow is the only controllable factor and tool available in the Klamath Basin" to protect against fish kills.

Following the fish kill, evidence emerged suggesting that the Bush administration had engaged in outright scientific suppression to justify its policies. Former National Marine Fisheries Service biologist Mike Kelly filed for whistleblower protection, charging that "political pressure" had corrupted the normal process whereby the fisheries agency should have assessed the potential threat to species before the Bureau of Reclamation could decide how it would regulate river flow levels. Kelly alleged that "obviously necessary analyses" went unperformed, even as he was pressured to remain "consistent" with a particularly rigid interpretation of the NAS interim report. He received the "distinct impression," he noted, that this demand came "from a very high level."

To hear Kelly talk about the fish kill is truly heartbreaking. Kelly guesses that sixty to seventy ESA-listed wild coho died (not to mention tens of thousands of dead Chinook). "But the thing to keep in mind is that they're a very rare fish," he explains. "If say fifty wild coho died, that may have been the entire run for a particular creek or subpopulation in the system. And in my mind as a biologist, losing the entire spawn in a subbasin would be a catastrophic thing." And the impact may have been worse than the number of dead fish would indicate. "While I was out there I saw a lot of stressed coho swimming around in schools that looked pretty bad," Kelly told me. "They may or may not have been able to spawn successfully."

Much like George W. Bush's decision on embryonic stem cell research, the Klamath fish kill provides a striking example of the consequences of ignoring science in political decision-making, as well a stunning indictment of the current administration's scientific stewardship. "I think it pretty clearly demonstrates that the federal agencies did a lousy job in ultimately considering the things that they need to do," says Kelly. "The fish kill is the biggest exclamation point on the end of that."

In the final analysis, the Klamath River Basin is a highly complex ecosystem that scientists don't completely understand. Forced to make a high-stakes decision in difficult circumstances in 2001, federal agency scientists charged with protecting species opted to err on the side of caution. That is true of many ESA decisions. Grappling with scientific uncertainty is the true challenge posed by the act, but "sound science" and "data quality" bills wouldn't fix this problem; they would simply gum up the process, deliberately creating paralysis instead of contributing to better and more timely analysis.

In a recently published article in *Environmental Law,* J. B. Ruhl makes a constructive suggestion. Agencies should stick with acting on the basis of "professional judgment" in most cases of scientific uncertainty, he argues, but in cases in which they decide to err strongly on the side of caution, comprehensive Klamath-style reviews could be employed to help keep government scientists honest. The proposal sounds both workable and well-intentioned—the opposite of "sound science." Once again, the Endangered Species Act "sound science" push is an excuse for inaction, not a scientific endeavor at all.

In fact, sometimes the cynicism can make your jaw drop. Consider the case of Rep. John Doolittle, the conservative California Republican we last encountered disdaining "a mumbo-jumbo of peer-reviewed documents" on the chlorofluorocarbon (CFC) ozone issue during the Gingrich years. Irony of ironies: Doolittle has signed on as a cosponsor of the Walden "peer review" bill.

At the 2004 Klamath Falls congressional hearing, Doolittle provided some comic relief. First, he tried doggedly to get NAS panel chair William Lewis to answer a *policy* question: *Should* the 2001 water shutoff have occurred? Lewis repeatedly (and properly) declined to answer the question, noting that the NAS committee had restricted itself to assessing the scientific basis for the water cutoff decision. Doolittle seemed incapable of grasping this distinction.

Later, Doolittle stumbled again, posing the following question to representatives of the Fish and Wildlife Service and the National Marine Fisheries Service: Why hadn't the agencies modified their policies following the 2001 water shutoff? "Congressman, they were [modified]," replied the National Marine Fisheries Service staffer. Apparently confused, Doolittle then launched into a tirade, instructing the agencies to "err on the side of the people" in enforcing the ESA—precisely what the law says they *must not* do—and proclaiming that "God created the earth for men and women"—an opinion that, true or false, has nothing to do with ESA decision-making. Doolittle's theological digression drew cheers from the Klamath irrigators packing the auditorium.

And even as the Right pushes its "sound science" reform agenda, conservatives use demonstrably *unsound* arguments to deny the need for stronger protection of species in a variety of instances. As a canonical case, consider the crusade to ease protections for more than twenty distinct populations of Pacific salmon and steelhead trout, currently defended from harm at a cost of some $700 million annually by the federal government, not to mention lost revenue claimed by landowners who have been prevented from building, farming, and logging near select streams, as well as engaging in other economic activities that could potentially harm fish habitats.

Catering to industry interests, in 2004 the Bush administration proposed counting the millions of fish churned out of hatcheries—which can actually harm wild populations through interbreeding, competition for space, and predation on smaller wild juveniles—in determining the ESA status of wild salmon stocks. The move, potentially leading to the delisting of salmon populations en masse, flew in the face of recommendations by six scientists serving on the Salmon Recovery Science Review Panel at the National Marine Fisheries Service (NMFS). These scientists, who had been approved for their roles by the National Academy of Sciences, claim

that agency higher-ups instructed them to remove arguments against the counting of hatchery fish from a scientific report that they filed. The scientists later went public with their views in the journal *Science*. The hatcheries debate thus ends up involving science abuses of two types: both suppression of scientific information and the basing of policy on dubious, industry-friendly "science."

Scientists have long known that hatchery-raised salmon show strong effects of domestication. Behaviorally, hatchery-spawned salmon differ strikingly from wild fish; they also compete with them and can alter their gene pool through interbreeding. For these and other reasons, historically, NMFS has not generally counted hatchery fish for ESA purposes, and has even viewed them as detrimental to wild populations.

That began to change, however, with a 1999 lawsuit brought by the conservative Pacific Legal Foundation (PLF), a group representing industry interests that has also been a key player in support of irrigation interests in the Klamath Basin. PLF challenged the listing of the Oregon coast coho salmon (different from the Klamath population) under the ESA. The group claimed that the fisheries agency indulged in "junk science" by failing to include genetically similar hatchery fish in its count.

In a September 2001 ruling, federal district court judge Michael Hogan, of Eugene, Oregon, essentially took PLF's side. The dispute gets a bit technical, turning on how fine a distinction the government can legally make in determining which fish to protect. Essentially, Hogan ruled that because the agency already classifies hatchery fish as part of genetically distinct salmon populations—technically called "evolutionary significant units"—it must also *count* them in determining whether those distinct populations are in jeopardy. The fisheries agency had created the "unusual circumstance of two genetically identical coho salmon swimming side by side in the same stream, but only one receives ESA protection and the other does not," the judge objected.

The ruling applied to just one of the more than twenty listed Pacific salmon and steelhead populations. But the legal requirement to count hatchery fish opened the door to challenges over many other listed populations. PLF thus calls Hogan's ruling "one of the most groundbreaking environmental decisions of the last decade."

Fisheries scientists, however, maintain that even as hatcheries teem with fish, wild salmon could become extinct without protection. They even liken hatcheries to zoos, whose populations simply have no bearing on the status of wildlife populations in nature. The approach suggested by Hogan's 2001 court ruling, noted the six NMFS advisers in *Science*, "ignores important biological distinctions between wild and hatchery fish," such as genetic adaptations to domestication that make the latter less viable in the wild. "Much evidence exists," they added, "that hatcheries cannot maintain wild salmon populations indefinitely."

Nevertheless, Judge Hogan's ruling, which took effect in early 2004 after legal delays, gave the Bush administration an opportunity to advance its own industry-friendly policy—whose dark underbelly was promptly exposed by the *New York Times*. The paper revealed that Mark C. Rutzick, a lawyer previously engaged by the timber industry to battle against species protections (including for the spotted owl), had helped shape the new policy as a legal counsel to the National Marine Fisheries Service (a position he left in early 2005). According to the *Times*, Rutzick had conceived of the hatchery strategy three years earlier while employed by industry. Now the fox was guarding the scientific henhouse.

Rutzick was already on record as applauding the 2001 decision by Judge Hogan. In a November 2001 commentary posted on the website of Douglas Timber Operators, Rutzick, described as "an attorney in Portland who has represented forest product interests in natural resource disputes for 15 years," called Hogan's Pacific salmon ruling "a victory for both the coho and the rural communities in southwestern Oregon that rely on the region's natural resources for their economic base." He went on to assert that according to "experts," using hatchery fish to restore salmon runs "will bring the runs back sooner and in greater numbers."

"That, scientifically, is nonsense," observes Ransom Myers, one of the six dissenting scientific advisers to the NMFS and chair of the Department of Ocean Studies at Dalhousie University, in Nova Scotia. Myers notes that while hatcheries may help wild fish in some specific cases, Rutzick's argument is "simply not true" as a general statement.

But when Myers and colleagues made essentially that point to their superiors at NMFS—arguing that the service should not count hatchery

fish as part of evolutionarily distinct salmon populations—they charge that an e-mail from an administrator labeled them "radical environmentalists." The scientists were then told to remove the recommendation from their report. "It's a clear example of policy trumping science," charges Robert Paine, an emeritus professor of biology at the University of Washington and chair of the salmon panel. When NMFS administrators try to justify their policy on hatcheries, Paine adds, "there's very little science in fact that they can offer up as saying hatcheries are good."

After Myers, Paine, and fellow panelists published their views in *Science,* NMFS officials defended themselves by arguing that the scientists had improperly strayed into making policy recommendations. But Myers dismisses the charge. The question of which fish you need to count in order to determine whether to classify a species as endangered "is certainly a purely scientific issue," he says.

The potential for public uproar appears to have dissuaded NMFS from taking its hatchery policy to its logical conclusion and delisting population after population of charismatic and symbolically potent Pacific salmon and steelhead (known for struggling powerfully against currents to return to the streams of their birth before spawning). But the proposed policy, which was slated to be finalized in June 2005, nevertheless lumps hatchery and wild salmon together for many populations. Moreover, agency administrators have made questionable scientific statements in defending their policy, reminiscent of Rutzick's claim that hatcheries could help restore wild salmon runs. "Just as natural habitat provides a place for fish to spawn and to rear, also hatcheries can do that," NMFS regional administrator Bob Lohn told the *Oregonian* in April 2004. "You can't define a cement tank as a natural habitat," counters Paine.

The current policy also seems guaranteed to fuel lawsuits, as industry interests seek to use the foot in the door the government has provided them—namely, the introduction of hatchery fish into the ESA equation—to force the delisting of wild salmon populations. In January 2005, in another case brought by the Pacific Legal Foundation, Judge Hogan challenged the listing of the Klamath coho under the Endangered Species Act, but did not overturn the listing outright pending the final issuance of NMFS's new hatcheries policy. PLF has also threatened a sweeping lawsuit to overturn a wide range of salmon protections if NMFS doesn't delist the species of its own volition. In short, instead of adopting the clear, science-based policy recommended by its scientists, the fisheries agency may have ensured mounds of litigation. "This will be a process that will go on for years," says Myers. "It shouldn't, because the science is pretty clear on this issue."

The Bush administration stands accused of similar science games with respect to the treatment of a number of other endangered species, such as the Florida panther and sage grouse. The administration's move to avoid enforcing strong protections for the threatened marbled murrelet, a small Pacific-northwestern seabird that nests in old-growth forests, fits the same pattern. In September 2004, newspapers reported that Fish and Wildlife Service official Craig Manson had ordered the agency's scientists to change their determination that murrelets in Washington, Oregon, and California are sufficiently distinct from Canadian and Alaskan populations to warrant protection.

Supporting the picture suggested by these anecdotal case studies, in early 2005 evidence emerged suggesting that the abuse of science has become endemic within the Bush administration's Fish and Wildlife Service. The Union of Concerned Scientists and Public Employees for Environmental Responsibility (PEER) teamed up to send surveys about science abuse and politicization to more than a thousand agency scientists, and received an impressive four hundred or so back. Almost half of the respondents working on endangered species reported that they had been "directed, for nonscientific reasons, to refrain from making [findings] that are protective of species." One out of five agency employees added that they had been "directed to inappropriately exclude or alter technical information from a USFWS scientific document." Half said they were aware of cases in which "commercial interests have inappropriately induced the reversal or withdrawal of scientific conclusions or decisions through political intervention." And so on. This is damning stuff.

These abuses ultimately fall at the doorstep of Craig Manson, the Bush administration's chief Interior Department official charged with implementing the Endangered Species Act and a supporter of "sound science"

reforms. As it happens, Manson is on record denying the starkly obvious link between human activities and species extinctions. In an April 2004 interview with *Grist* magazine, Manson was asked to comment on studies showing close correlations between the rise of industrialization and population growth and species extinctions. "It is a logical fallacy to suggest that because two things happen concurrently they are necessarily related, without further evidence," Manson replied.

This astonishing statement prompted a letter from Stanford conservation biology postdoctoral fellow Kai Chan, a co-creator of a website critiquing the Bush administration's science policies called ScienceInPolicy.org, noting that Manson had ignored "an overwhelming body of evidence that virtually all recent extinctions and endangerments have human-associated causes." Indeed, in its 1995 report *Science and the Endangered Species Act,* the National Academy of Sciences noted that "human activities are causing the loss of biological diversity at an increasing rate: The current rate of extinction appears to be among the highest in the entire fossil record." That quotation comes from the second sentence of the report's introductory chapter. If the government's official in charge of Endangered Species Act enforcement willfully denies something so absolutely basic to our scientific understanding of the plight of endangered species, we should hardly be surprised at calculated attempts to spin science in situations like the Klamath.

Having been sufficiently regaled by Greg Walden, Wally Herger, and especially John Doolittle at the Klamath Falls congressional hearing, I depart from the Ross Ragland Theater, happening to pause at the entrance on the way out. Makeshift metal detectors have been installed at the doorway, and peering down, I see a colorful assortment of pocket knives of various sizes lying in a box on a table alongside the machines—implements presumably confiscated earlier in the morning as Klamath irrigators poured into the building for the hearing. The image—a kaleidoscope of banned penknives—seems emblematic of the Klamath farming community, a distinct patch of red within the reliable blue state of Oregon.

Later that day, driving along the highway that conducts drivers (almost exclusively of trucks) between Klamath Falls and northern parts of Oregon, I spot a massive bald eagle perched on a telephone pole, peering down into the algae-rich waters of Upper Klamath Lake. Out over the lake, a white pelican flaps by, its black primary feathers creating a striking color contrast with the bald eagle's white-headed, black-bodied plumage. Beneath the murky waters, invisible to me but perhaps not to the hungry eagle, shortnose and Lost River suckers troll the shallow lake bottom, inhaling small crustaceans and insects.

Eagles happily dine on endangered suckers, I later learn, particularly on older or sick ones that venture near the shore or surface. "One of my field crew had a sucker dumped on them by an eagle," Doug Markle tells me. It's certainly a complicated image: one revered and majestic ESA-listed species feeding on an obscure and despised one. A species whose rescue is due in part to the act of preying on one whose fate few care about.

As the contrast between bald eagle and sucker suggests, our political and aesthetic values play a large role, ultimately, in determining how much effort we pump into saving an endangered species, and which ones we will sacrifice the most to keep. Nevertheless, the Endangered Species Act remains a powerful piece of legislation, and however incompletely enforced, applies to *all species.* If political conservatives and their constituents don't like that, they should announce their earnest intention to amend the political and moral vision embodied in the ESA. "At least be honest about it and say, 'We don't really want to protect the fish,'" says Mike Kelly.

Those who feel this way have every right to push for legislation that would reverse the current requirement that government agencies take prompt action to save species. But what they shouldn't do—both because it is dishonest and because it corrupts a form of assessment that our society depends upon—is to try to blind us all with science.