

Amid Economic Uncertainty, an Irresistible Investment

Moving into the second decade of this century, wetland professionals are understandably apprehensive regarding the future of wetland management in light of undeniable economic challenges, coupled with public skepticism of government programs. However, we should be encouraged by a look back over the history of wetland science and policy—spanning many years of economic highs and lows, political mood swings, and environmental challenges. Our knowledge and our ability to address wetland issues have progressed far beyond where I might have imagined at the start of my career with the Michigan Department of Natural Resources and Environment over 30 years ago. While I have no urge to revisit the bumpy maturation of our state and national wetland programs—any more than I would like to repeat junior high—wetland management has clearly grown up.

Wetland science has steadily progressed on many fronts. Not only academic scholars, but boots-on-the-ground wetland managers have far more in-depth knowledge of the extent and landscape setting of numerous wetland types, how they interact with both aquatic and terrestrial ecosystems, their sensitivities, and the ecological services that they provide. We have also learned a great deal about both the possibilities and limitations of wetland restoration, including mitigation. General public understanding reflects our increased knowledge. Little explanation was needed by those reporters who commented on the impacts of the Gulf oil spill, or on the relationship between Hurricane Katrina and coastal wetland losses—readers and viewers got it. A variety of polls have demonstrated broad public support for wetland protection and regulation, even as some continue to express irritation with regulatory programs. Notably, regulatory discontent frequently results from the process itself—the time, cost, and impact on individual plans, rather than from the concept of wetland protection.

In spite of past advances, there are, without question, multiple challenges awaiting resources

managers and the public that we serve. Along with competing economic concerns, we face global-scale issues that include the protection of freshwater reserves, climate change, and loss of biodiversity. We worry: will we have the support and the capacity to respond?

I anticipate that public support for wetland management will continue, for the simple reason that to do so is not only in the public interest from an environmental perspective, but in the public's best economic interest. Protection of water resources is a long-term economic necessity. Likewise, regional water management issues—flooding, drought, and associated water rationing—impact everyone, includ-

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ing businesses, agriculture, and the public at large. The significant role of wetlands in the management of water, and the potential to use wetland systems to minimize public expenditures through the use of green infrastructure, support the notion that wetland protection, management, and restoration offer irresistible long-term economic benefits to society. That these same actions also serve to support biodiversity, provide fish and wildlife habitat, and maintain open space can only broaden historical support by conservation interests.

In spite of societal benefits, we will still need to respond openly, and as directly as possible, to resistance to regulation and funding for wetland programs from

those who question fairness to landowners, and to concerns regarding government priorities, costs, and efficiency. We can offer fair and open approaches to help achieve consensus on these issues. I would suggest that, as we respond, we consider three general concepts.

First, we need to demonstrate that our advanced scientific understanding is being actively translated into more effective regulatory decisions and more beneficial voluntary programs. This demonstration should address not only decisionmaking on individual permit applications, but also cumulative impacts to wetland area and function. Cumulative impacts in particular can be best evaluated through the

mapping of wetland systems and the monitoring and evaluation of wetland condition, which have been advanced through cooperative partnerships among government agency, academic, and private partners. Voluntary programs also benefit from expanded knowledge—for example, the integration of wetland protection and restoration into local watershed plans has been embraced enthusiastically by numerous watershed managers. We need to ensure that policymakers are informed of advances in wetland programs based on improved science.

Second, the related use of technology—geographic information system, global positioning system, and digital communication tools—all provide the ability to better track effectiveness of programs, improve effi-

ciency, expand openness, and, significantly, convey results. As with many areas of our lives, communication technology has given us far greater access to scientific information, government policies, and public discourse on the challenges facing our environment from local to global scales. As we improve our ability to communicate effectively in the din of the information age, we can expand understanding of the role of wetlands in addressing the issues facing society.

Finally, the way forward will be easier for us all if we share the load more effectively. In my years in state government, our most successful initiatives have most often resulted from genuine partnerships—not simply a sharing of funds, but a sharing of interest, ability, and imagination. In Michigan's regulatory program, we partner with the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and local government, taking full advantage of the strengths of all agencies in delivering an effective and efficient regulatory program. Even after intense scrutiny by the private sector, the basic structure of this partnership remains intact, as we work together to refine the permitting process. As obvious as the benefits of shared efforts may appear, an atmosphere of competition, rather than cooperation, often exists among agencies and organizations that share common goals. It is unfortunately easy to fall into a pattern of protecting limited financial and staff resources rather than working cooperatively, or to mistrust the motives of other levels of government or organizations. But to the extent that we are able to convert the time, energy, and funds spent on conflict to the development of shared solutions, we will all benefit. Our citizens, and our aquatic resources, will benefit.

What lies ahead? No doubt continued challenges, rewarding advances, and unanticipated setbacks. However, at some point in a future decade, wetland managers will look back on the current time as a period of positive change and progress—in scientific understanding, in the development of sound policy, and in protection of our water and wetland resources, as our shared efforts come to fruition. ■

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CONSERVATION

Wetlands Conservation in the 2012 Farm Bill

Will the Farm Bill still be the best answer for conservation of wetlands in the agricultural landscape after 2012?

In the world of actual, on-the-ground conservation of wetlands, there are several ways to get the job done. One of the largest non-Farm Bill programs is the North American Wetlands Conservation Act (NAWCA). Over the past 15 years, this program has spent approximately \$61 million annually—which was matched by approximately \$144 million per year from folks like Ducks Unlimited, Pheasants Forever, state wildlife agencies, and a host of other partners—to positively affect around 235,000 acres of wetland habitats. In addition, many of those same partners also spend other funds on conserving wetlands in a host of state and local wetland conservation programs—programs that are vital to keeping our water clean and maintaining viable populations of the plants and animals dependent upon wetlands.

In contrast, the U.S. Department of Agriculture (USDA) wetland conservation programs that are mainly aimed at conserving, enhancing, or restoring wetlands annually spend approximately \$290 million (fiscal year (FY) 2007-2008 data) to conserve approximately 1,750,000 acres (FY 2009 data). Admittedly, not all of those acres are permanently conserved, but approximately 180,000 of those acres enrolled annually in the Wetland Reserve Program (WRP) are permanently conserved.

So, if the Farm Bill programs are the best funded and enroll the most acres in conservation efforts for wetlands, what's the problem?

There are several problems, starting with the need to reauthorize the Farm Bill in 2012. The provisions of Farm Bill 2008 begin to run out in the summer of 2012. In 2010, the U.S. House of Representatives Agriculture Committee, under the leadership of Chairman Collin Peterson (D-Minn.), and the U.S. Senate Agriculture, Nutrition, and Forestry Committee, under the leadership of Chairwoman Blanche Lincoln (D-Ark.), began to gather information from leaders in agriculture and conservation.

Everyone agrees that the new funding will be at the same level or less than that contained in the 2008 Farm Bill. How much less will be determined by the various baselines scored by the Congressional Budget Office, a little understood process that the U.S. Congress uses to establish what committees have to work with when writing legislation. Add in the several forms of "Pay-Go," whereby programs without a baseline must get funds from another with a continuing baseline, imposed on the process by the Obama Administration, Congress, and the political process, and you have a financial picture understood by very few, even on the Hill.

At a briefing for interested folks at the Farm Foundation Forum on September 14, 2010, Craig Jagger, Chief Economist for the House Agriculture Committee, talked about the 2012 Farm Bill funding prospects and also reminded everyone that 38 currently funded USDA programs have no baseline after the end of the 2008 Farm Bill. One of those 38 programs is the WRP. He also advised that to reinstate all of those programs into the next Farm Bill would involve finding offsets of \$9 billion from other USDA programs.

OK, so we might lose the WRP, but the Conservation Reserve Program (CRP) is still taking care of a lot of wetlands annually and has mandatory funding authority. So, what's the problem?

Back in 2007, to help fund the whole suite of conservation programs in the 2008 Farm Bill, the CRP was reduced from 39.2 million acres to 32 million acres. That means we really have to target wetlands to get coverage for them in the reduced acreage scenario that exists.

Unfortunately, the Farm Service Agency—because they have multiple Continuous CRP wetland practices in their toolkit, some of which have acres going unused—did not see the need to continue giving wetlands included in general CRP sign-up offers any extra points in the Environmental Benefits Index (EBI). Because the EBI score in a CRP offer largely determines whether it is accepted, fewer points

reduces the chances of getting wetlands in the Prairie Pothole or the Playa Lakes regions enrolled in the general CRP.

Also, the county acreage caps that limit a county's total enrollment in the CRP still tie the WRP and the CRP together, which limits the ability to use the WRP in many critical areas.

The bottom line . . . to really conserve our wetlands, all of us who care about wetland con-

servation (and the groups we belong to) need to pull together in the run-up to the next Farm Bill to ensure that the WRP is reauthorized and that wetlands are a priority for future CRP general signups. If we fail in that effort, the answer to my question at the beginning of this article is a resounding "No!" ■

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MITIGATION

Reconciling Watersheds and Ecoregions: What's in a Number?

"Pick a number. Is it a 6, an 8, a 10, or a 12?" To most people, other than mind readers at the carnival, this means very little. However, to wetland ecologists, academics, agency regulators, and mitigation bankers, it is one of the hottest topics in the compensatory mitigation discussion today.

Under the joint U.S. Army Corps of Engineers (the Corps) and U.S. Environmental Protection Agency Final Mitigation Rule (the Rule; Compensatory Mitigation for Losses of Aquatic Resources, 33 C.F.R. §332.2(b) (2008)), the entire focus of compensatory mitigation was reset to the needs of the watershed, rather than on-site mitigation. The common metric in classifying a watershed is the U.S. Geological Survey Hydrologic Unit Code (HUC) classification, which gives a number to the size of a watershed. Smaller numbers tend to be larger watershed areas consisting of a major riverine system with several rivers and streams, where smaller numbers (HUC-8, -10, -12) relate to rivers and their streams. When considering service areas for mitigation banks, they may be sized according to several factors, including the type of aquatic resources being impacted, regional habitat or species recovery plans, locations within watershed, governmental jurisdictions, and the economic viability of mitigation banks.

Unfortunately, the options for determining the size of service areas has resulted in a lack of consistency and generated debate over how to determine appropriate areas. Given the differences in regional hydrogeomorphic features, physical jurisdictions, habitat and species recov-

ery efforts, and impacts on wetlands, focusing on watersheds may not be the most ecologically beneficial for a given resource. The Rule integrated the watershed approach into determining service areas, but also included other specific considerations, such as landscape position, habitat requirements for important species, and conversion trends. In addition, the considerations section of the Rule stated that compensatory mitigation "should not focus exclusively on specific functions," e.g., water quality, but rather on a "suite of functions typically provided by the affected aquatic resource." Thus, a process that incorporates all the ecological factors, along with more flexible service area ratios, may be a more prudent approach to determine service areas, rather than a fixed watershed number.

The typical approach to dealing with compensatory mitigation within a watershed calls for keeping all mitigation within the affected watershed. However, this is more difficult than it sounds. A HUC-6 usually consists of a large river basin comprising several thousand square miles and several rivers and streams, whereas a HUC-12 can be as small as a drainage basin for a creek. While the Rule did not specifically establish one size of watershed, it did suggest a HUC-8 in urban areas and a HUC-8 or HUC-6 in rural ones. Unfortunately, sometimes the mere suggestion of a number can become the default position for regulatory implementation.

Another approach to addressing an appropriate area for which compensatory mitigation can occur is ecoregions or bioregions. The definition for these terms is loosely related to areas that

have similar ecological or biological functions. In terms of aquatic habitats, this could include wetland habitats with similar features, such as estuaries, tidal wetlands, seasonal wetlands, or unique habitats, such as bogs, fens, or vernal pools. For other important biological functions, such as species habitats or rare or endangered species, the ecoregion could be rivers or streams with similar fish species, or vernal pools with rare or endangered crustaceans, such as fairy shrimp. While these important areas do occur within a watershed, the range of habitat for the rare or threatened species may be an ecoregion that crosses over a number of adjacent watersheds. While watersheds may focus more on the water quality, flooding, groundwater recharge, or flow issues related to rivers and wetlands, ecoregions may focus more on the species assemblage or target habitat amounts needed for species health and sustainability. This approach to allowing compensatory mitigation within service areas by "watershed, ecoregion, physiographic province" is also clearly called out in the Rule.

In a recent article by Philip Womble and Martin Doyle in the *National Wetlands Newsletter*, "Setting Geographic Service Areas for Compensatory Mitigation Banking," the authors noted very wide differences both in approach to determining watershed and the actual watershed HUC units applied throughout the different Corps districts. While there are a number of ecological, administrative, and statutory reasons for the wide differences to approach this issue, a standardized approach could help reduce conflicts and add protection for resources that do not benefit fully from using watersheds as service areas.

For example, vernal pools, classified under the Hydrogeomorphic Classification System as depression wetlands, typically are found within certain similar elevations and soil types found across a number of adjoining watersheds. There are a number of identified key vernal pool ecoregions that have been designated for protections. However, often the classic HUC-8 only includes a small portion of the designated vernal pool complexes that have been designed for recovery within the vernal pool region.

Estuarine wetlands are only found at the lower end of a watershed and typically have very limited reach up to the higher elevation areas of the watershed. Thus, the functions and values of these wetlands are more similar to areas within adjacent watersheds occupying similar landscape

position than to other wetlands in different ecoregions within the watershed.

While there is general agreement among the wetland biologists, regulators, and even the mitigation community that the new focus on watersheds in addressing compensatory mitigation is a step in the right direction, these examples provide a good indication of the challenges with relying too heavily on watersheds.

Given the wide variety of geomorphic, hydrologic, and ecologic factors related to any wetland habitat, it is still generally accepted that the appropriate service area or mitigation area should be determined on a case-by-case basis. However, that is as far as the general consensus goes. Agency regulators still tend to apply their individual regulatory requirements to their interpretation of the appropriate mitigation. For example, federal and state wetland regulators tend to promote a strict watershed approach, whereas other members of the mitigation community, such as the federal and state wildlife or environmental quality entities, focus more on ecoregions, while members of the regulated community, either the project applicants or mitigation providers, such as bankers, look more for consistency and socioeconomic factors.

However, amid all the competing influences and interpretations of deciding what and where appropriate compensatory mitigation should be located, it is generally accepted that it is important to provide some balance in determining the most appropriate service area, which, at a minimum, should include watershed, ecoregion, and economic considerations.

Thus, a prudent approach to addressing the potentially conflicting ecological and economic issues surrounding this watershed issue would be to develop a consistent and documented process for how to determine compensatory mitigation areas and service areas. A process that requires that all the relevant factors be considered and documented would ensure that not just one approach is used.

This formal process would require that the following items be included and documented in the development of compensatory mitigation or service area.

Watershed: Use a general watershed approach when considering the appropriately sized basin that may encompass a service area. Areas with greater topographic variation should support service areas identified by ecoregions within larger HUC designations and/or adja-

cent HUC areas. In addition, as mentioned in the Rule, designation for urban and rural banks should be called out and larger service areas provided to those more rural areas with lower potential for impacts.

Ecoregions: The language in the Rule calls for including the requirements of various aquatic or terrestrial federally or state-listed threatened or endangered species in the determination. Areas with designated recovery plans, such as salmonid recovery plans in coastal zones, vernal pool recovery units, and other appropriate habitat plans, should be incorporated into the watershed calculations.

Other relevant factors: Finally, the issue most challenging for regulators is the “other relevant factors” designation that is called for in the Rule. This addresses issues such as “development trends, anticipated land use changes and other issues.” While this is often not an issue of major interest to the regulators, nor is it something that is within their general expertise, it is still important to any mitigation project, especially a bank or in-lieu fee project. If the watershed or ecoregions area is not expected to experience many impacts,

then the need for compensatory mitigation site is very limited. This will lead to the establishment of extremely small-size mitigation sites, which has already been listed as one factor for failure in earlier studies on mitigation success.

One approach that provides some flexibility is the use of ratio or penalty factors that allow greater use of existing banks by providing larger service areas, but applies a higher ratio or penalty factors for more distant mitigation outside of the more immediate watershed. As one would suspect, this approach is favored by the mitigation banking community.

We all recognize that the statement “one size doesn’t fit all” should not only apply to people, but to watershed selection. Thus, rather than try and make all decisions on the best location and size for compensatory mitigation fall into one standard HUC size, we should develop a formal process to ensure that all the relevant factors are being considered in a balanced fashion. Again, what is in a number? ■

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INTERAGENCY REVIEW TEAMS

Layering Multiple Credit Types in Mitigation Banks

Conservation banking, or banking credits to offset impacts to species listed as threatened or endangered under the federal Endangered Species Act (ESA), has developed on a parallel path with mitigation banking, or banking credits to offset impacts to wetlands under the Clean Water Act (CWA). Although developed separately and under different federal jurisdictions, these two types of resource credits (ESA and CWA) can be compatible within the same bank and even on the same acreage, and it makes ecological sense for a project that is going to impact multiple resources to compensate for those impacts in one place. Steve Martin’s column in the September-October 2010 *National Wetlands Newsletter* discusses the legal aspects of offering multiple credit types in a mitigation bank; here, I will give some practical considerations based on banking in California.

The Compensatory Mitigation for Losses of Aquatic Resources Final Rule (33 C.F.R. parts

325 and 332, 2008) published jointly by the U.S. Army Corps of Engineers (the Corps) and the U.S. Environmental Protection Agency (EPA), outlines a framework for mitigation banking similar to the “Guidance for the Establishment, Use, and Operation of Conservation Banks” published by the U.S. Fish and Wildlife Service (FWS) in 2003. Both documents build on earlier guidance published over the years by the Corps and other agencies. Both jurisdictions recognize the need for basic protections of land set aside for banking, in the form of perpetual easements, permanent funding mechanisms, agency-approved management plans, and monitoring regimes.

Depending on the resources involved, these two credit types, ESA and CWA, can be accommodated in the same bank, and even on the same piece of ground. It is common practice in California to combine different credit types this way, and is likely a major factor in the success of the

banking industry and the large number of banks located in this state. Some consider the practice of overlapping credit types to be “stacking,” which has negative connotations of selling the same piece of ground twice—known as “double-dipping” in the industry—but this is not the case as practiced in California.

A good tracking system and procedures that are standardized across the separate jurisdictions are essential for a multiple-credit system to work. Detailed credit ledgers that account for all credits released, available, and sold must be in place for any bank, even those with only one credit type. On a bank with ESA and CWA credits on separate ground, it is very easy to account for each credit type as credit releases occur and as credits are sold. These credits do not overlap, so they can be used for different impact projects, and once sold are taken off the books, or “retired” permanently, and cannot be used as compensation for any other projects.

The accounting becomes a little more complicated on banks with ESA and CWA credits that overlap on the same acre. This works best with the “1 acre = 1 credit” model, which is by far the simplest method, leaving compensation ratios to be worked out on the impact side of the equation. As practiced on such banks in California, credits can be sold in a number of ways, as shown in two examples, one fairly simple, the other more complex. The Van Vleck Ranch Mitigation Bank in Sacramento County has credits that may be used for CWA, ESA, CWA+ESA, or CESA (CESA credits are used to offset impacts to species listed as threatened or endangered under the California ESA) (Table 1). Although a CWA+ESA credit can be used to compensate for impacts to either CWA or ESA resources, or both, the two resources can never really be separated. If such a credit is used as CWA only, then the ESA component is retired as well—it cannot be used. This combined credit could be used for impacts to both CWA and ESA resources, but only for the same impact project. In the case of the Van Vleck bank, the CWA+ESA credits are for vernal pools (a CWA resource) that contain vernal pool fairy shrimp (an ESA resource); impacts to vernal pools in Sacramento County often impact fairy shrimp as well, so it is advantageous for a bank to have this combined resource.

Credit Type	Number of Credits
Vernal Pool Creation (CWA+ESA)	16.24
Vernal Pool Preservation (ESA)	27.10
Swanson’s Hawk (CESA)	722.11
Total Credits	765.45

Credit Type	Number of Credits
CTS (ESA+CESA)	34
LIVI or LIVI+CTS (ESA+CESA)	7.6
LIVI or LIVI+CTS or BLBA or BLBA+CTS or BLBA+LIVI or BLBA+LIVI+CTS (CWA+CESA)	1.7
Wetland or Wetland+CTS (CWA+ESA+CESA)	1.75
Total Credits	45.05

The Hale Mitigation Bank in Sonoma County presents a far more complicated example, with plant preservation credits for two different listed plant species, Sebastopol meadowfoam (*Limnanthes vincularis*, or LIVI) and Sonoma sunshine (*Blennosperma bakeri*, or BLBA), as well as the California tiger salamander (*Ambystoma californiense*, or CTS) and wetlands (Table 2). In this case, an existing mitigation bank with CWA credits was amended to add the ESA credits (the plants and CTS). Further complicating this model, the CTS uses both the created and preserved wetlands, so their credits spatially overlap with the wetland and plant credits. However, the plants are present only in the preserved wetlands, and therefore the plant credits do not overlap with the wetland credits. Row 3 column 1 of Table 2 shows a credit type that can be used in a number of ways, for impacts to the listed plants and/or CTS. If a purchaser wished to compensate for project impacts to LIVI, BLBA, and CTS for the same project and wished to do so by purchasing credits at the Hale Mitigation Bank, and needed to purchase 0.25 credits for all three, those would be deducted from the 1.7 credits available for this use. If they only needed 0.25 credits of BLBA and not the other two, then the 0.25 would still be deducted from the 1.7 credits available. In this case, the CTS and BLBA components would be

retired as well, and could not be used to compensate for impacts to those species. This bank also has a unique prohibition against using the CTS+Wetland credits (Table 2 Row 4) for CTS only. In allowing the mitigation bank to be amended to add ESA credits, the Corps was concerned that all of the combination wetland/CTS credits could be sold to compensate for impacts to CTS only, leaving no credits to compensate for impacts to wetlands, so those credits may only be used as combination wetland/CTS credits, or as wetlands only.

Standardizing the procedures used to establish banks can alleviate some of the complications involved with setting up and tracking banks that have multiple credit types. This also requires coordination by and among regulatory agencies that wish to authorize bank credits as compensatory mitigation. Seven regulatory agencies in the state of California—the California Department of Fish and Game, the California Resources Agency, the Corps, EPA, the FWS, the National Marine Fisheries Service, and the Natural Resources Conservation Service—signed a memorandum of understanding agreeing to work together to develop standardized practices for mitigation and conservation banking that would be followed throughout the state. This led to a suite of templates, which are used to streamline the process of authorizing banks. The templates are designed to deal with the complexities of including several signatory agencies with different regulatory jurisdictions, and multiple credit types in each bank. They include the Bank Enabling Instrument, Conservation Easement, Property Assessment and Warranty, Long-Term Management Plan, and checklists explaining mitigation banking proposal procedures. These templates are available on the Sacramento Fish and Wildlife Office’s website, www.fws.gov/sacramento/es/cons_bank.htm. The next step is to get all of the banks uploaded into the Corps’ Regulatory In-Lieu Fee and Bank Information Tracking System, known as RIBITS, which will enable the regulatory agencies who authorize compensation credits, and the public, to track the use of mitigation and conservation bank credits. ■

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