

**ISSUE 5: FUNDING**

Kentucky forests are home to invaluable resources from which a variety of benefits to Kentucky residents, both ecologic and economic, is derived. Our forests provide the basis for timber production, wildlife habitat, quality water, recreation opportunities, and aesthetic beauty for residents and tourists alike. Kentucky is among the largest hardwood-producing states, contributing over \$13.5 billion in 2017 from the wood products manufacturing sector, and employing over 26,500 Kentuckians.<sup>74</sup> While financial gains from timber production are perhaps the most obvious, the abundant forested areas of Kentucky simultaneously provide woodland wildlife habitat and recreation opportunities, both of which can translate to tourism dollars derived annually from fishing, hunting, and wildlife watching in and adjacent to Kentucky forests.

To ensure proper management, the Commonwealth must work with many different individuals and entities to bring forests under a management plan. Kentucky forests are primarily owned by private individuals, and many own plots less than 50 acres in size.

**TABLE 3 – DIVISION OF FORESTRY PROGRAM FUNDING SUPPORT, 2012 – 2018**  
(Thousands of Dollars)

FUNDING SOURCE	2018	2016	2014	2012
Federal	\$ 2,335,300	\$ 2,416,100	\$ 3,592,100	\$ 3,473,000
State	\$ 13,779,000	\$ 14,566,300	\$ 12,826,000	\$ 14,175,000
Product Sales Revenue	\$ 378,800	\$ 334,100	\$ 407,919	\$ 632,000
Other Revenue	\$ 1,203,700	\$ 674,000	\$ 540,981	\$ 524,000
Revenue Total	\$ 1,582,500	\$ 1,008,100	\$ 948,900	\$ 1,156,000
<b>Total</b>	<b>\$ 17,696,800</b>	<b>\$ 17,990,500</b>	<b>\$ 17,367,000</b>	<b>\$ 18,804,000</b>

(Source: <http://www.stateforesters.org/publication-type/stats>) State funds include reimbursements for wildfire fire suppression averaging more than \$3.5 million annually. State funds for personnel and operating remain around \$10 million.

**A. Current Status of Kentucky Division of Forestry Funding**

Funding for Kentucky forests should be driven by one goal – proper forest management that results in a healthy, productive forest ecosystem that is the source of long-term sustainable revenue and benefits to all of Kentucky. The economic benefits realized by landowners and industry will benefit Kentucky’s economy as well as all citizens. While forest uses and their associated benefits are varied and necessary, proper forest management driven by sustainable development will lead to the creation of reliable income to landowners, and in turn increased tax revenues to the state and local communities, forestland wildlife habitat, improved water quality, and recreational opportunities from an aesthetically-pleasing forest.

The KDF is the primary state agency charged with providing for the protection and enhancement of the Commonwealth’s vast forest resources. The sources of its funding, shown for 2012 to 2018 in Table 3 , are primarily from state and federal funds, and to a lesser degree, agency revenues. These numbers indicate a gradual decrease in total available funding from 2012 to 2018. The KDF has seen a reduction in federal funds due to the decline of available federal funding for the Stewardship & Urban programs. Because of reduced general funds, the KDF underwent a reorganization in February 2013. This resulted in a reduction

of the work force from 188 to 154 employees. In 2016 and 2018, the Governor issued an executive order for state funding budget reductions, which resulted in 2.5% - 3.0% less or fewer funds appropriated to the agency. The current personnel cap for the division is set at 129 full-time employees.

In recent years, the agency has implemented new initiatives to increase revenues to offset the loss of funding. The slight increase in agency earned revenue is due to assisting with out-of-state all risk response with the Southern Compact and U.S. Forest Service nationwide. The KDF also assists other local state and federal agencies with prescribed fire burns to help mitigate the risk of wildfires.

Funding and staffing levels are a challenge for the KDF, and do not support the many programs and services mandated by KRS 149. Recent expenditures and staffing levels are shown in Tables 4 and 5 respectively. Personnel levels have steadily decreased and state funding for forestry programs is not likely to improve in the foreseeable future.

**TABLE 4 – DIVISION OF FORESTRY EXPENDITURES, 2012 – 2018**  
(Thousands of Dollars)

PROGRAM	2018	2016	2014	2012
Fire Control / Protection/ Management	\$ 6,655,200	\$ 8,337,300	\$ 7,954,837	\$ 9,903,000
State Forest Management	\$ 405,200	\$ 360,700	\$ 275,619	\$ 463,000
Cooperative Forestry Management / Landowner Assistance				
State Programs (state funds spent on state landowner assistance programs including technical assistance & cost-share programs)	\$ 2,540,000	\$ 1,529,800	\$ 1,628,408	\$ 343,000
USFS Programs (Forest Stewardship, Forest Legacy, etc)	\$ 306,000	\$ 3,117,800	\$ 221,622	\$ 2,268,000
Farm Service Agency / NRCS Programs	\$ 100,500	\$ 24,300	\$ 127,242	\$ 483,000
Forest Products Utilization & Marketing	\$ 111,800	\$ 173,200	\$ 157,913	\$ 100,000
Forest Health	\$ 515,700	\$ 606,300	\$ 357,262	\$ 451,000
Urban & Community Forests	\$ 278,300	\$ 308,600	\$ 277,873	\$ 228,000
Nursery	\$ 700,100	\$ 760,400	\$ 881,963	\$ 960,000
Forest Recreation	N/A	N/A	N/A	\$ 50,000
Forest Inventory and Analysis	\$ 754,800	\$ 756,000	\$ 578,540	\$ 716,000
Watershed / Water Quality Protection / BMP	\$ 1,144,200	\$ 915,600	\$ 1,239,452	\$ 754,000
Other	\$ 4,185,000	\$ 1,100,500	\$ 3,666,269	\$ 2,085,000
<b>Total Expenditures</b>	<b>\$ 17,696,800</b>	<b>\$ 17,990,500</b>	<b>\$ 17,367,000</b>	<b>\$ 18,804,000</b>

(Source: <http://www.stateforesters.org>)

**TABLE 5 – DIVISION OF FORESTRY PROGRAM PERSONNEL, 2012 – 2018**

STAFF CLASSIFICATION	2018	2016	2014	2012
Managerial	19	28	28	24
Professional	56	68	68	74
Technician	59	69	69	92
Administrative / Clerical	14	14	14	21
Seasonal / Temporary	157	108	108	106

(Source: <http://www.stateforesters.org>)

The lack of resources is illustrated with the timber harvesting requirements of the Kentucky Forest Conservation Act (KFCA) of 1998. Under this Act, commercial timber harvesting loggers and operators are required to use appropriate BMPs, and have a Kentucky Master Logger on site and in charge of all commercial logging operations. The KDF is required to inspect logging operations for compliance with both provisions. Although these actions are progressive, the General Assembly did not provide for an increase in staff or funds to the KDF for the inspection of commercial timber harvests. The KDF had to redirect personnel performing other duties to the commercial timber harvesting inspection and enforcement program. This program was and continues to be an unfunded mandate. The Act does provide for fines collected as a result of non-compliant commercial logging operations, to be placed in a dedicated Stewardship Incentives Fund. This fund is to be used by the division for cost-share programs that provide financial assistance to landowners for the development of stewardship plans, and for stewardship practices. However, fines collected by the division have not been substantial enough to implement a state cost-share program. An additional influx of funding would be necessary to begin a state cost-share program.

Increased funding levels are important, particularly because private landowners (including non-timber corporate owners), control approximately 88% of the forested land in Kentucky.<sup>4</sup> About one-third of these private holdings represent small plots of 50 acres or less. These smaller parcels are highly fragmented and more difficult to manage for timber and wildlife resources, as well as protecting watersheds. However, these small parcels have significant value. In 2016, privately-owned Kentucky forests created 5.7 jobs per 1,000 acres, and generated \$223 in payroll per acre when the direct, indirect, and induced benefits are included. Per acre, these forests also contributed \$170 to the GDP.<sup>75</sup> While these values are significant, they are below regional averages<sup>75</sup>, and therefore could be improved with proper forest management.

Mismanaged, poorly managed, or unmanaged forests are less productive. Funding supporting education, outreach and development of management plans for these private landowners is crucial in positioning landowners to qualify and receive all federal funding opportunities contained in the Federal Farm Bill.

Funding is also important due to the high degree of fragmentation in Kentucky’s forests. As discussed in Issue 3, large tracts of continuous forest lead to healthier, more productive forests that are more ecologically functional and aesthetically pleasing. Small, scattered tracts of forests are more difficult to manage and of limited value to wildlife and outdoor enthusiasts. Managing small, scattered forests requires more time and money (e.g., traveling between sites, management plan development, etc.). Therefore, funding in the form of federal, state, and local programs must address these small forests to be effective in managing all of Kentucky’s forest resources for the future.

As mentioned, many programs within the KDF would benefit from increased funding. In particular, funding could be targeted for forest assessments and monitoring, conservation assistance programs to landowners including the Forest Stewardship Program, cost-share programs, Kentucky HLCF, and the Urban and Community Forestry Program.

The KDF's reliance on unpredictable federal and state funds has resulted in the loss of personnel due to fund reductions. Opportunities to seek private or other funding must be seized at every opportunity. The KDF should enter into partnerships with non-profit organizations that can provide additional funding for forest conservation and enhancement. The KDF should train and make available employees for all-risk incident support within and outside of Kentucky. Prescribed fire assistance could also generate funds for the KDF.

## **B. Economic Overview of Kentucky's Timber and Non-Timber Industries**

Kentucky's forests provide an essential revenue stream throughout all levels of the state and local economies. Proper forest management driven by sustainable development will lead to the creation of reliable income to landowners, as well as increased tax revenues to the state and local communities. Proper forest management does not happen in a vacuum. Funding is often needed to provide education and service programs to assist property owners in making the right decisions for their forestlands and to combat threats to the health of the forests. However, the prospect of increased economic returns due to forest management can be a promotional tool to accomplish these same ends. A brief overview of the importance of Kentucky's timber and non-timber forest products industries to the state's economy follows.

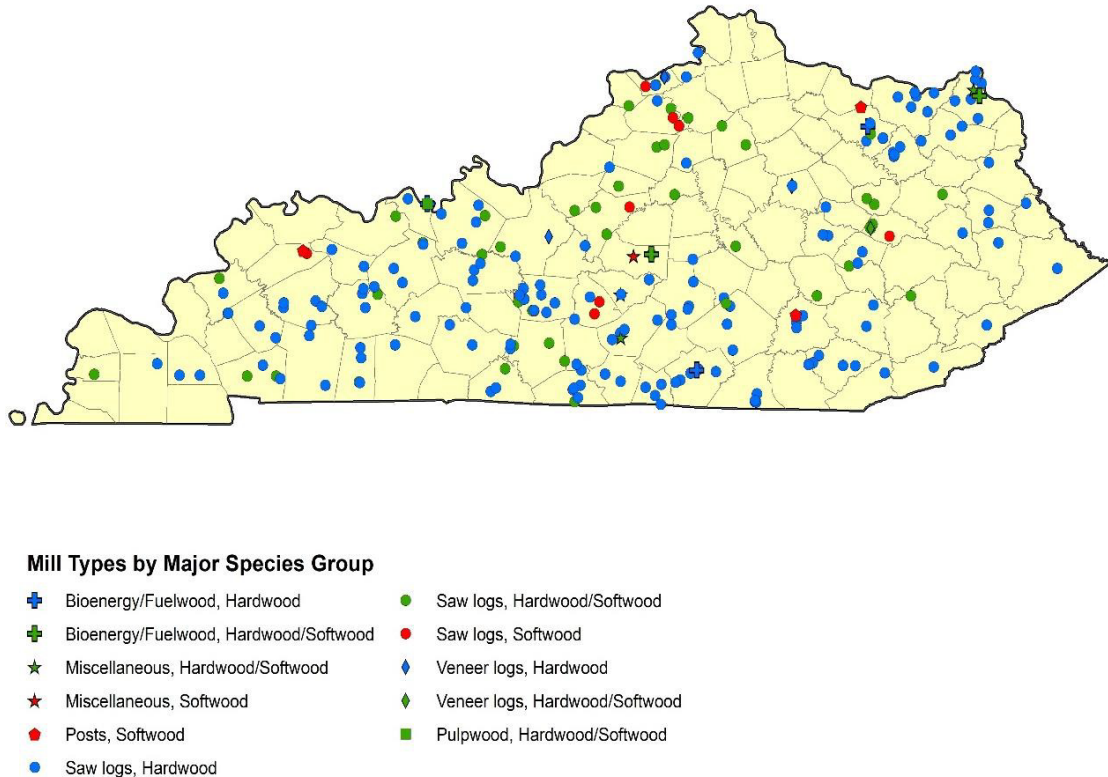
### **1. Timber Industry**

Most Kentuckians do not realize the importance of the timber industry to the overall economy of the state. In 2018, more than 26,500 individuals were directly employed at wood-processing facilities, with a total annual payroll of \$1.61 billion. When indirect and induced employment is included, the total employment numbers swell to over 60,000. The total economic contribution in 2018 was \$13.51 billion. These facilities are spread throughout the state, as shown in Figure 28. Though timber production is often overlooked, it is a major component of the Kentucky economy.

The most common hardwood timber species in Kentucky for 2017 roundwood production include: red oak, white oak, (36%); yellow poplar (13%), ash (11%), black walnut (6%), hickory (5%). Other hardwood species included hard and soft maple, sweetgum, sycamore, and black cherry, black gum, beech and basswood.

Softwood timber production was primarily southern yellow pine (loblolly and shortleaf at 58%), and eastern red cedar (31%). The remaining documented softwood species utilized include cypress, hemlock, and white pine.

2017 Kentucky Primary Mill Locations



**FIGURE 28 – PRIMARY WOOD-USING MILLS OF KENTUCKY, 2017**

**2. Non-Timber Forest Products**

Kentucky’s forests are rich in non-timber forest products (NTFP) such as herbs, roots, sap, bark, fruit, and wood gathered from, but not cut from, timber. Harvesting these products has been practiced for centuries, and it provided an important source of income for pioneer families. Renewed interest in herbal remedies and the herbal medicinal industry, as well as for ornamentals and food sources, has led to increased harvest of these resources by Kentuckians as well as non-residents. While the beneficial effects of some of these herbs remains anecdotal, demands are high for herbal remedies such as ginseng, black cohosh, bloodroot, coneflower, goldenseal, passionflower, slippery elm, and witch-hazel.

**C. Public Benefits**

Funding of proper forest management that results in a healthy, productive forest ecosystem will provide many benefits to all Kentucky residents. Forests are a multifaceted renewable resource, yet they cannot be maintained without cost, nor should those who enjoy them expect that forests are self-sustaining. By maximizing a forest’s sustainability for the numerous end users, a reliable long-term tax base can be generated. Taxes generated from the timber and tourism industries can have a synergistic effect, as funds are reinvested into forest management and land acquisition, resulting in larger, more functional, and more productive forests.

In addition to tax generation, there are additional benefits of forestry funding to be realized by local residents, especially forest landowners. Educational and outreach programs are often the first to be eliminated in a budget shortfall, yet they are perhaps the most important for the long-term benefit of Kentucky's forests. The need continues for program coordinators devoted to forestry education programs at district or regional levels to easily reach Kentucky's forest landowners. Educational outreach can help landowners develop a forest management plan and teach local residents the inherent value of their forests. Cost-share programs (e.g., EQIP) can be used to help landowners implement forest management plans via several avenues such as removing exotic pest plants and planting valuable forest tree species. Additionally, living in and adjacent to forested areas often increases property values as residents tend to view them as more aesthetically pleasing. Property values associated with forested areas are typically higher than those that are not.

Kentucky is home to one national forest (DBNF), two national recreation areas (Big South Fork and Land Between the Lakes), three national parks (Mammoth Cave, Cumberland Gap, and Big South Fork), ten state forests (Green River, Kentenia, Kentucky Ridge, Pennyrile, Tygarts, Knobs, Marrowbone, Big Rivers, Marion and Rolleigh Peterson Educational Forest), 88 wildlife management areas, 41 state nature preserves, and six state natural areas. Most of these holdings are at least partially forested. Kentucky also has large public forested land on military grounds including the Blue Grass Army Depot, Fort Knox Military Reservation, and Fort Campbell Military Reservation. The benefit to Kentucky citizens of these public holdings is significant, and the importance of preserving their forestland is high.

Because hunting, fishing and wildlife watching are significant social and economic activities in Kentucky, their enhancement should continue. The importance of forests is noted in the Department of Fish and Wildlife Resources' *Wildlife Action Plan*, so too is the importance of wildlife in this *Forest Action Plan*. Residents and non-residents alike use Kentucky's federal- and state- owned forests, parks, and wildlife management areas extensively for hunting, fishing, wildlife viewing, camping, hiking, horseback riding, mountain biking, and numerous other recreational activities. These activities, as well as tourists visiting the forests, represent a significant economic benefit to the Commonwealth. These activities improve the quality of life for those who seek solitude or adventure in Kentucky's forests.

#### **D. Direct Threats and Contributing Factors**

The threats to the forests of Kentucky have been identified in each of the forest issues. Additional funding would be required to address many of these issues. Some threats, however, are more directly tied to funding or the traditional timber and NTFP industries and are discussed below.

##### **1. Economic Pressures to the Timber Industry**

Kentucky's timber industry is closely tied to the global markets. Forest industry in the United States comprises 17% of global roundwood production, and the nation has the highest intensity of industrial roundwood consumption per capita. The impact of the 2007 recession on wood product demand is still reflected in inventory data, with a 19% decline in Southern timber removals between 2006 and 2016. However, that trend should reverse as housing markets continue to recover. Implementation of forest management plans will improve existing stands to maximize income derived from the timber source.<sup>76</sup>

Conversely, a shift from traditional hardwood products to fuel sources derived from woody biomass has potential to alter how forests are harvested. Large-scale production of woody biomass for various types of fuel could alter the age class of forests, with more focus on rapidly growing softwood species at the

expense and loss of larger, more valuable timber. A change in species diversity in the forests due to harvesting targeted towards biomass production would also negatively impact certain terrestrial species' habitat.

## **2. Emerald Ash Borer**

Threats of invasive species have been discussed in other sections of this Forest Assessment, particularly in Issue 1. Yet the Emerald Ash Borer (EAB) poses a direct threat to exports of Kentucky's ash harvest. Foresters can mitigate for the loss of ash trees by planting other species, yet this is a long-term process to recoup the investment. In the short term, foresters can harvest mature ash trees prior to the arrival of EAB. Yet all these decisions are difficult to make and benefit from assistance from county extension agents. Funding to preserve these services is essential to the health of the Kentucky timber industry.

Loss of mature ash trees will also negatively impact the urban forests of Kentucky, where the loss of these large trees will be more readily noted by the general population. Notwithstanding, the loss of aesthetic value that these beautiful trees represent, the cost to cities and counties to remove dying trees and replace them with other species, poses a daunting challenge for already stressed municipal budgets.

## **3. Unsustainable Harvest of NTFP**

The long-term health of the traditional timber and Nontraditional Forest Products (NTFP) industries suggests an increase in technical assistance, regulation, and oversight. Current harvest of some NTFP species may already be at levels that will lead to extirpation in Kentucky's forests. Proper management will allow continued harvests while maintaining the species for the economic benefit of the Commonwealth. Because of Kentucky's long history of unregulated NTFP collection by rural communities, changing from a short-term benefit (immediate income) to a long-term vision (sustain income stream for decades to come) is difficult to understand. Education is an essential tool to changing this mindset. The funding needed for this effort is likely significant and, at the present time, not available.

## **4. Woody Biomass Harvesting**

Woody biomass offers great economic promise as an alternative fuel source for vehicles and electrical power, particularly in the short-term. Industries that sell pulpwood and other low-value factory lumber could divert it to biomass production. However, over-harvesting and poor management resulting from the emergence of this sector could threaten Kentucky's forests, the sustainability of the emerging industry, and the existing forest industries. As the market for woody biomass grows, it may reduce the availability of lumber for production of pallets, charcoal, railway ties, etc. Long-term effects include the potential for reduction in quality sawtimber by short-term introduction of chip markets in traditional hardwood sawtimber territories. More intensive harvesting leads to younger timber lots and loss of the older, larger classes of timber. However, it is clear that a profitable, thriving woody biomass market may alter Kentucky's forest industry.<sup>61</sup>

## **5. Competition for Funding and Public Apathy**

Competition for forestry funding is particularly strong in light of a global recession that has seen cutbacks in government budgets and spending in Kentucky, across the country, and around the world. As budgets have declined, public opinions have naturally shifted from support of line items providing a sense of well-being (e.g., forest conservation, tree planting) to those providing a sense of security (e.g., health care, job security). Public apathy towards forest management is also a result of the apparent abundance of forest, albeit with unhealthy conditions (i.e., composed of invasive species, trees of low timber and wildlife value,

infested with pests and disease). These conditions are easily overlooked by someone unaware of the difference between a healthy, productive, functional forest and one that is of less value.

Further threatening forest funding is the nature of the investment. An investment in Kentucky's forest is a long-term investment. Human nature is prone to selecting options that provide the most immediate benefit even if an investment in something more long term will provide vastly greater benefits. This is so with Kentucky forests. Though the investment is high and long-term, the resource is renewable, reusable, sustainable, and can be enjoyed by a multitude of end users (e.g., timber industry, wildlife, nature enthusiasts).

### ***E. Opportunities***

Investments in Kentucky forests are an investment in Kentucky's future. Kentucky is one of the largest hardwood lumber producing states. Non-traditional forest products derived from the forest include ginseng (most valuable, with annual harvests of several million dollars), bee products, native and exotic mushrooms, maple syrup, craft materials, fence posts, and fuel wood. The forest industry as a whole contributed \$13.5 billion to the Commonwealth's economy.<sup>4</sup> Such economic benefits cannot be ignored. Forest users run the gamut from industrial to recreational and include timber companies, sportsmen, wildlife enthusiasts, hikers, and other outdoor recreational enthusiasts. Due to the great diversity in end users of forests and the variety of products derived from them, opportunities for investment in our forests are as abundant as the benefits they may yield.

The Division of Forestry has made strides in reducing expenditures while taking advantage of opportunities to bring in additional revenue. Like Kentucky, other states and the US Forest Service have had personnel reduction due to funding. As a result, the capacity to respond to wildfire and other natural disasters is limited. The division has been able to provide personnel and equipment during emergencies in other states. Division employees gain valuable experience and the agency realizes additional revenue by providing personnel and equipment use.

#### ***1. Cost-share and Education Opportunities for Private Forest Owners***

While funding opportunities that support and maintain federal lands is important, it is critical that more of Kentucky's forestland be covered by management plans due to the predominance of privately-owned lands. Insect pests, invasive plants, infectious disease, and wildfire are a constant threat to the health of our forests. The KDF's programs currently in place provide assistance to forest landowners and education to the public on the consequences of exotic invasive plants and arson.

As previously mentioned, 88% of Kentucky's forests are owned by private individuals and by corporations. Currently, only an estimated 1% of the family landowners have a written management plan and only 12% have sought professional advice on proper forest management. Funding cost-share programs can help private landowners more effectively manage their forested lands. In order for landowners to take advantage of cost-share programs, technical assistance must be available from the state and other technical service providers.

Persuading private landowners to adopt management plans requires educational outreach. Funding for the KDF, UK and the NRCS district offices should be preserved and preferably enhanced. Utilizing the State Stewardship Coordination Committee's role as a subcommittee of the NRCS State Technical Committee may assist in the funding of forestry cost share and technical service providers in the public and private sector. Landowners who own and harvest small plots of forestland often do not realize the impacts of poor

management practices, fragmentation, and over harvesting. Because of the large number of these private landowners, the cumulative beneficial impact of educational outreach could be significant.

A properly managed forest will also produce more timber of better quality, provide better wildlife habitat, and be more appealing to outdoor enthusiasts, all of which has the potential to generate revenues for the state. More high quality timber will result in higher tax revenues. Enhanced wildlife habitat will lead to an increase in the number of hunters and wildlife enthusiasts visiting forested areas. License fees from hunters (and potentially wildlife enthusiasts), as well as money spent in communities within and adjacent to forested areas, will also generate revenue. Similarly, creation of regulated outdoor facilities (e.g., ATV parks, equestrian and mountain biking trailheads) will generate revenue.

## **2. Ecosystem Services Markets**

In addition to hunting fees, recreational tourism, and increased timber revenues, ecosystem service markets are emerging as an additional revenue stream.

The United States Department of Agriculture (USDA) was created in an effort to push forward the development of the ecosystem services markets legislated under Section 2709 of the Food, Conservation, and Energy Act of 2008. The Office of Environmental Markets was established to develop uniform standards and market infrastructure that will facilitate market-based approaches to agriculture, forest, and rangeland conservation.

The first ecosystem service examined by this new office was carbon sequestration, but other services such as wetland mitigation banking, biodiversity credits, renewable energy, sustainable timber, and water quality credits would be further developed as commodities. It proposes a portfolio approach to forest management where multiple streams of revenue are generated by traditional food and fiber products, eco-labeling such as forest certification, and woody biomass and alternative energy in addition to ecosystem markets for species habitat, standing carbon, water quality, and wetlands.

In Kentucky, some of these ecosystem markets have already been developed and could be further expanded. Although no water quality credits have been traded in Kentucky to date, multiple wetland mitigation banks have been established throughout the state driven by Section 404 of the Clean Water Act. The Kentucky Transportation Cabinet (KYTC) Stream and Wetland Mitigation Program is one such bank established in order to provide compensatory mitigation for unavoidable wetland impacts.

The KYTC has also successfully developed a conservation fund in order to comply with the Endangered Species Act. Through payment into an Indiana Bat Conservation Fund, mitigation for projects that adversely impact this endangered species can be directed towards projects that will aid in the recovery of the species.

Unlike the water, wetland, and biodiversity markets that are driven by regulatory protection, the carbon market is driven by voluntary participation. In order to ensure funds are available for landowners managing their forests for the benefits realized by all Kentuckians, it would be necessary to establish rates and payments for these services and using these funds as financial incentives for forest management.

## **3. Woody Biomass**

Another emerging opportunity comes from the biofuels market. The trend towards reducing petroleum fuel use in vehicles in favor of ethanol also represents a potential benefit for Kentucky's wood industry.

Currently, ethanol is produced primarily from corn, but the resulting impacts on the price of corn for human and animal consumption are expected to make ethanol production from woody biomass a more cost-effective option. Although the technology to convert woody biomass to ethanol is not currently commercially viable, such a conversion would benefit Kentucky's forest owners. Sources for these biofuels include unextracted wood and bark from current timber harvest, debris from urban sources, woody material from thinning and other forest improvement treatments, and biomass energy plantings.<sup>61</sup>

While additional sources of revenue are needed, Kentucky's wood products industry must be watchful that a secondary effect of the "Green Revolution" – development of a commercially viable woody biomass industry – does not inflict long-term damage to the quality and sustainability of Kentucky's forests or negatively impact its water quality. Yet the opportunity to develop a new, clean industry using abundant renewable natural resources gives Kentucky an advantage over states with less abundant resources.