

Economic Considerations Of Louisiana's Cypress Resource

A Discussion Paper

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Background

Recently, concern has been expressed by environmental interests and concerned citizens regarding the harvest of cypress¹ grown in Louisiana. This concern grew after the devastation caused by Hurricanes Katrina and Rita and the growing knowledge among the citizenry of the changing structure of the coast. The changing structure of the coast is a result of many factors including human intervention to prevent upstream flooding of the Mississippi River (mainly levee construction) resulting in nutrient deficiencies and land subsidence, human settlement and encroachment, rising sea levels, and exploitation of natural resources for human benefit, among other factors. These formerly forested areas helped protect the state from the most damaging effects of hurricanes in the past. Since cypress is an integral component of forests that inhabit lowland areas and areas in relatively close proximity to Louisiana's coast, concern about the loss of cypress because of the aforementioned factors has come to the forefront in terms of issues facing landowners, land managers, and concerned citizens in Louisiana. Some argue that certain uses for cypress, such as harvesting or using cypress for mulch, is an unworthy end for the tree and cypress should not be used for these purposes. Others argue that most trees are the property of private owners who have rights protected by law to have trees harvested from their land as they see fit. Yet others charge that cypress that is harvested in Louisiana comes from unsustainable sources.

Some facts about Louisiana's cypress resource

Conserving, maintaining, or enhancing the cypress resource along areas related to Louisiana's coast is recognized by most experts as an important endeavor and worthy of careful scrutiny and further research. Cypress is also a prominent tree species in lowland

areas throughout Louisiana². The United States Department of Agriculture Forest Service (USFS) compiles and maintains a database of forest and tree data for the United States called the Forest Inventory Analysis or FIA database³. Table 1 shows the latest growing stock⁴ data for Louisiana that was compiled in 2005. Note that growing stock of cypress can be found in many Louisiana parishes across the entire state.

Table 1. Cypress in Louisiana by volume of growing stock in cubic feet (note: only parishes with measured growing stock are presented in the table). Web citation: Miles, Patrick D. Nov-05-2007. Forest inventory mapmaker web-application version 3.0. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]

PARISH	Total Growing Stock (cubic feet)
Acadia	8,518,711
Allen	1,325,242
Ascension	52,078,017
Assumption	212,494,407
Avoyelles	31,434,091
Beauregard	1,222,635
Bienville	22,365,533
Bossier	903,062
Caddo	324,004
Calcasieu	4,367,993
Caldwell	6,912,510
Catahoula	6,176,709
Claiborne	5,810,421

PARISH	Total Growing Stock (cubic feet)
Concordia	25,624,733
East Baton Rouge	2,541,112
Franklin	2,287,896
Grant	27,780,264
Iberia	19,642,239
Iberville	107,448,103
Jefferson	12,022,834
Lafourche	80,817,404
La Salle	3,892,590
Livingston	65,297,372
Natchitoches	21,614,338
Ouachita	43,761,043
Pointe Coupee	21,742,308
Rapides	27,477,526
Sabine	1,259,565
St. Charles	14,072,925
St. James	62,090,609
St. John The Baptist	42,501,444

PARISH	Total Growing Stock (cubic feet)
St. Landry	41,794,974
St. Martin	158,584,794
St. Mary	69,676,863
St. Tammany	40,692,391
Tangipahoa	46,717,170
Terrebonne	168,261,460
Union	18,787,451
Vernon	20,769,735
Washington	11,376,530
Webster	18,624,458
West Feliciana	44,320,854
Winn	30,356,143
Total	1,605,770,462

Table 2 shows removals of cypress growing stock. Notice that 12 parishes showed removal of cypress growing stock.

Table 2. Removals of cypress growing stock in cubic feet. Web citation: Miles, Patrick D. Nov-05-2007. Forest inventory mapmaker web-application version 3.0. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]

PARISH	Total Removals (cubic feet)
Beauregard	109,628
Bienville	147,673
Iberville	945,233
Lafourche	574,274
La Salle	792,421
Ouachita	509,797
Pointe Coupee	94,361
St. James	1,790,227
St. Landry	259,639
St. Mary	242,899
Union	314,580
Vernon	101,055
Total	5,981,785

From the FIA data we can see what we have for total growing stock in the state and we know how much is being removed according to the data. Perhaps a more important question is how much is being removed as a percentage of how much what we have is

growing. Table 1 shows the net of growth versus removals for the parishes in which, according to the USFS FIA data, harvesting of cypress occurred. Keep in mind that FIA data is based on sample field plots, not on a land census. Therefore, it is only an approximation for what actually exists in terms of growth and harvest or removals.

Table 1. Net of total cypress growth less total removals for parishes in which cypress harvesting occurred, according to FIA data.

Parish	Total Growth (cubic feet)	Total Removals (cubic feet)	Net Growth (cubic feet)
Beauregard	190,877	109,628	81,249
Bienville	698,325	147,673	550,652
Iberville	2,114,737	945,233	1,169,504
Lafourche	800,393	574,274	226,119
La Salle	771,364	792,421	-21,057
Ouachita	1,184,542	509,797	674,745
Pointe Coupee	389,508	194,361	195,147
St. James	1,025,691	1,790,227	-764,536
St. Landry	1,925,334	259,639	1,665,695
St. Mary	1,841,794	242,899	1,598,895
Union	1,139,714	314,580	825,134
Vernon	84,033	101,055	-17,022
Total	12,166,312	5,981,787	6,184,525

The data show that removals exceeded growth in only three Louisiana parishes. Comparing all twelve parishes where cypress removals occurred, growth exceeded removals by 6.2 million cubic feet. In other words, removals only accounted for 49% of growth. Statewide, total growth (40,016,136 cubic feet) exceeds removals (5,981,787 cubic feet) by over 34 million cubic feet. Or, putting it differently, removals constitute only 15% of the total growth of cypress statewide. Therefore, according to the data we have available, it seems evident that cypress is a resource found throughout the state, that statewide growth is outpacing removals, in three parishes removals have outpaced growth, and in one of those parishes the difference is significant. For the state as a whole, the data indicate we are growing more cypress than we are harvesting.

Data Deficiencies

However, the data can not tell us everything we need to know with respect to the state's cypress resource. This was one of the many findings of the Governor's Science Working Group on Coastal Wetland Forest Conservation and Use (hereafter referred to as the SWG). The SWG was commissioned by Louisiana's governor "...to provide information and guidelines for the long-term utilization, conservation, and protection of Louisiana's coastal wetland forest ecosystem, from both environmental and economic perspectives"⁵. The SWG produced a report in 2005 titled "Conservation, Protection and Utilization of Louisiana's Coastal Wetland Forests"⁶. Among the many detailed findings and recommendations made by the SWG in their final report to the governor, some specific findings included collecting site specific spatial data regarding hydrologic (water-related) and geomorphic (pertaining to the earth) conditions that could help define where critically sensitive areas existed that needed to be closely watched and analyzed to determine whether or not harvests that occur in these areas could be successfully regenerated. It is important to note that the SWG considered the zone of interest to include areas where major river bottoms drained to the coast in the southern part of the state, such as the Atchafalaya and Pearl River Basins⁷. Figure 3 shows the SWG's Coastal Wetland Forest Area. Figure 4 shows the USDA Forest Service inventory regions (areas in green) that also comprise the SWG coastal wetland forest area and

includes forested wetlands within the SWG's coastal wetland forest area (black line) compared to the traditional Louisiana coastal zone boundary (pink line).

Figures 3. Science Working Group's Coastal Wetland Forest Area. Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, page 3.

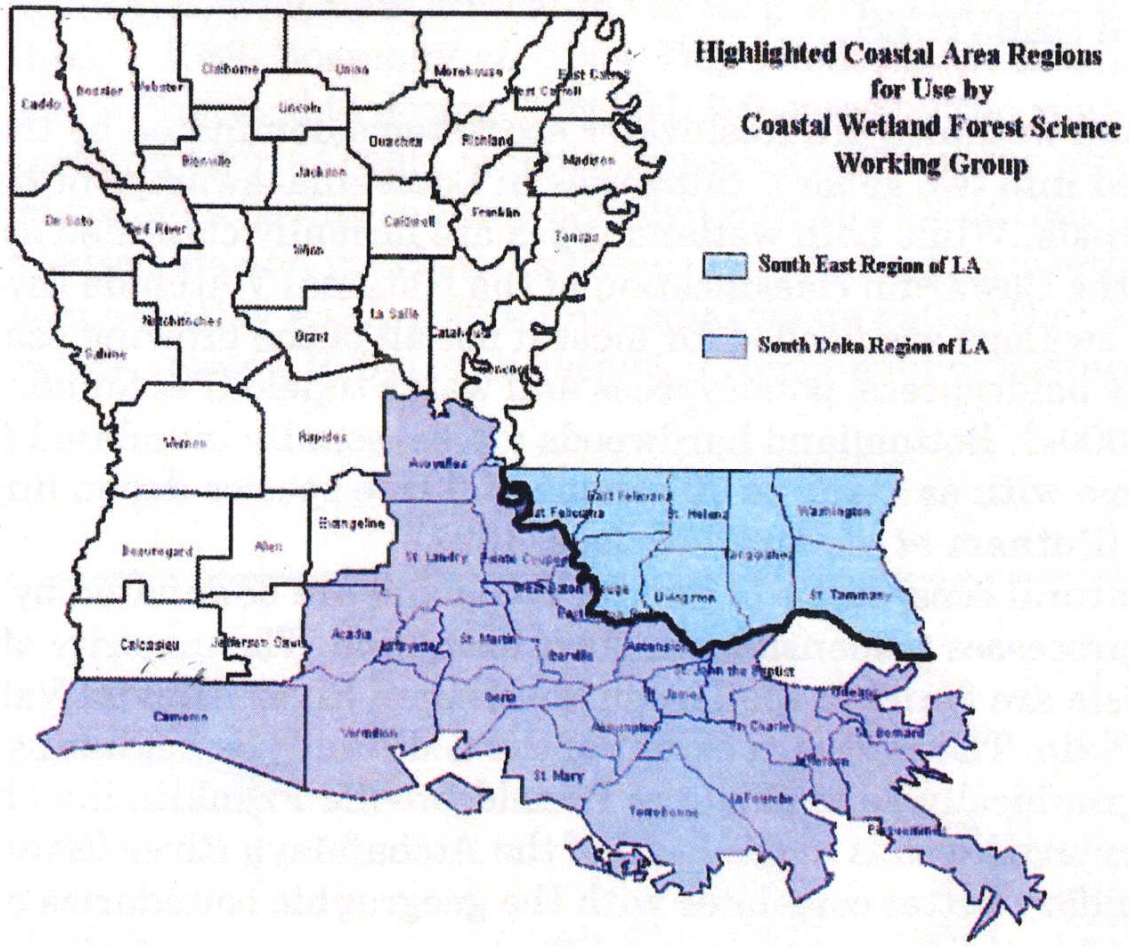
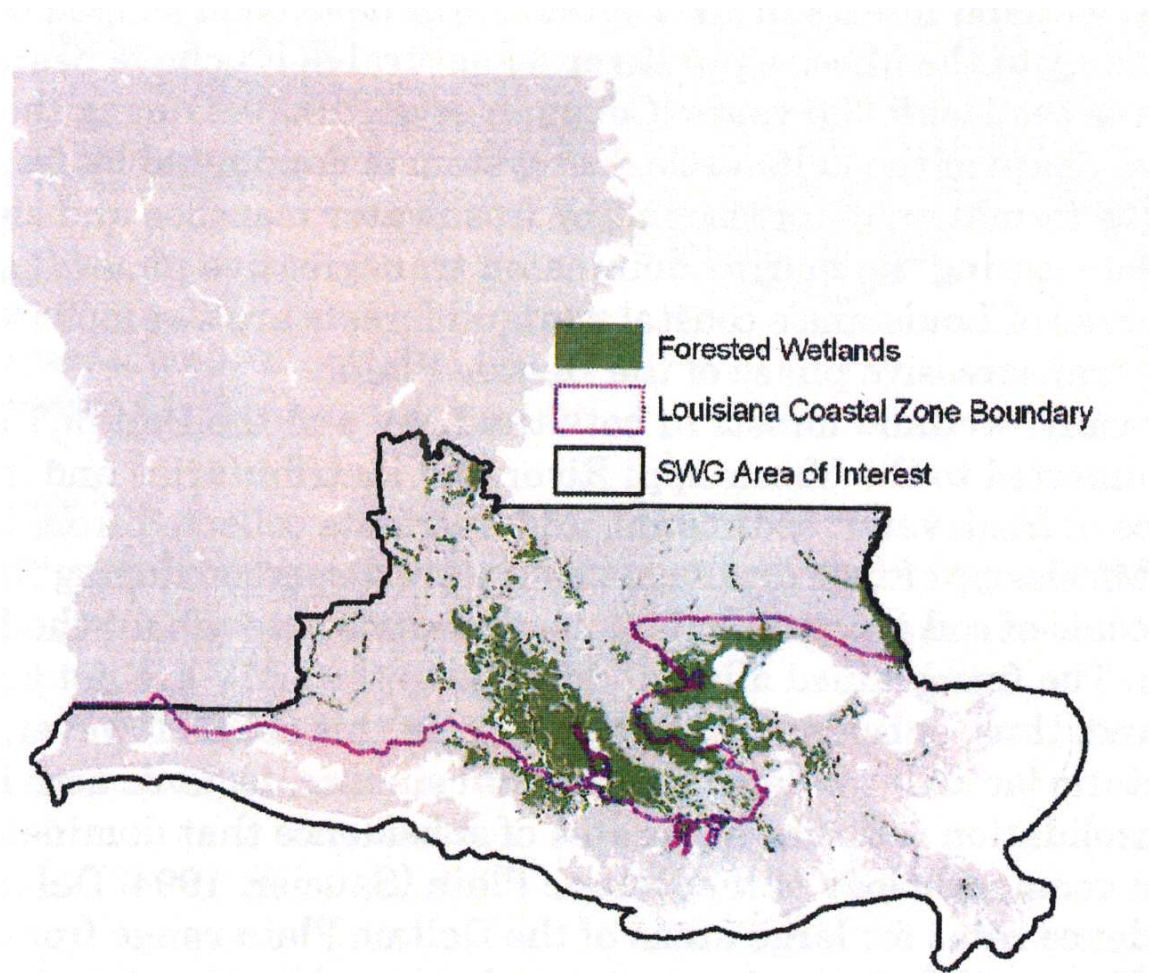


Figure 4. USDA Forest Service inventory regions that also compose the SWG coastal wetland forest area and includes forested wetlands within the SWG's coastal wetland forest area compared to the Louisiana coastal zone boundary. Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, page 3.



The SWG indicated that regeneration was critical to the process of sustaining coastal wetland forests. The SWG developed three condition classes of forested wetlands that they recommended be used within the SWG Area of Interest⁸. Condition class I was defined as forested wetlands that had the potential to be regenerated naturally. Condition class II was defined as forested wetlands that did not have the potential to be regenerated naturally but did have the potential to be regenerated artificially. Condition class III was defined as those forested wetlands with no potential for either natural or artificial

regeneration. The SWG recommended that, within this area, harvesting should be delayed on condition class III lands and written forest management plans with specific regeneration plans be required and reviewed by a state approved entity⁹. The SWG recommended that policy mechanisms including incentives should be explored to assist with maintaining and enhancing coastal wetland forests¹⁰

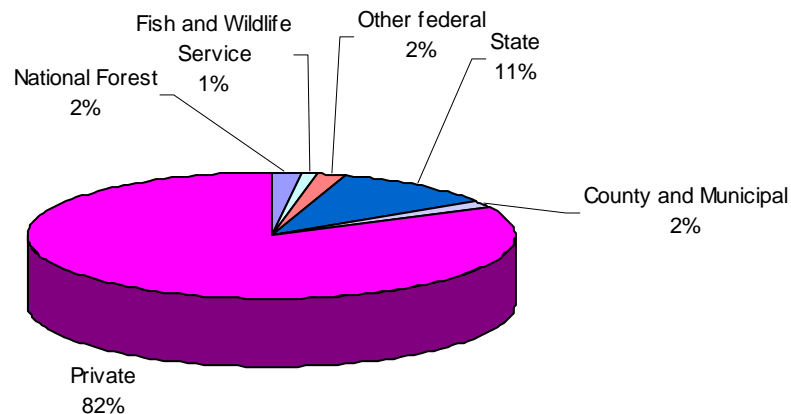
The SWG also acknowledged that existing data is insufficient to determine where these different condition classes currently exist within the SWG Area of Interest and stressed the need for this data in order to manage and care for coastal wetland forests¹¹.

Economic Benefits of Cypress

Obviously, cypress is part of an ecosystem in coastal areas of Louisiana that has many benefits that aren't easily measured in terms of dollar values. Coastal wetland forests provide wildlife habitat, flood protection, water quality improvement, carbon storage, and soil stabilization, none of which can be easily accounted for because these values aren't typically traded in a market. Coastal wetland forests also have traditional market value. Economics benefits can be and are derived from fishing, crawfishing, hunting, other recreational endeavors, tourism, and timber production. Many different products are derived from cypress itself. It has long been valued for solid wood products such as lumber, paneling, and molding. One cypress product that has gained popularity in recent years has been cypress mulch. Cypress is a preferred mulch and has been recommended for its attractiveness in home – grounds applications and its purported durability compared to other wood mulches. The cypress resource used in mulch can come from a variety of sources but typically in Louisiana has come from either secondary sources such as leftover tree tops and other residuals that result from harvesting trees from solid wood products. More recently cypress mulch has come from trees harvested for the primary purpose of producing mulch.

As we have seen, cypress does not grow only in coastal areas of Louisiana. And, as is the case with most forested systems in the southern United States, most of the land on which cypress grows is owned by the private sector (Figure 5).

Figure 5. Who owns the cypress in Louisiana? Percentage of net volume of live cypress trees on timberland by ownership class. Web citation: Miles, Patrick D. Oct-05-2007. Forest inventory mapmaker web-application version 3.0. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]



Private ownership of cypress in Louisiana ranges from large companies with large holdings to very small owners with only a few acres.

For those landowners wanting or needing to derive income from cypress, mulch may be another source of income. Consider the following: a forestland owner in Louisiana pays property taxes on forestland he or she owns. For any sort of goods or services purchased by the landowner in association with the forestland, he or she pays sales taxes. When timber is harvested, a severance tax is paid just like it is paid when oil or gas is extracted. In the case of severance tax associated with timber harvests, 75% of the tax revenues go to local governments to help fund local needs and projects. Twenty-five percent of the tax proceeds go to the state, and a significant portion of that is earmarked for the Louisiana Forest Productivity Program, a very important and very successful

reforestation cost share program in Louisiana. Landowners also pay either income tax or capital gains tax (depending upon individual factors) when they sell timber. Landowners also incur other costs such as management costs associated with managing timberland and general maintenance and upkeep of boundaries and other property features. Given that forest landowners incur significant costs and are able to recover costs infrequently or irregularly, it is important that they have sources of income that not only offset these costs but also provide investment income in the future. If such opportunities do not exist, it is possible or even likely that management of privately held forestlands would diminish or even cease, because the cost of maintaining them could become prohibitive.

Prevalence of cypress harvests for mulch production

Although harvesting for cypress mulch can provide private forest landowners wanting to sell with another source of income, it doesn't appear that harvesting cypress for mulch is a significant enterprise in Louisiana. In 2006, there were 62,680 tons of cypress mulch produced in Louisiana¹². Through conversion, we can convert this tonnage into a cubic foot volume. The cubic foot volume of cypress mulch produced in Louisiana in 2006 was approximately 4.8 million cubic feet¹³. Recall from Table 1 above that the total volume of growth of cypress as reported by the 2005 FIA survey data was 12.2 million cubic feet. Therefore, cypress used for mulch in Louisiana in 2006 constituted approximately 39% of the volume of growth of cypress in Louisiana.

As mentioned earlier, not all mulch comes from trees specifically harvested for the purpose of conversion to mulch. Mulch can also come from other sources, such as left over limbs and tops that result from harvest for solid wood products. Also, cypress wood residuals and excess from solid wood mills can be sold to mulch producers. This reduces the volume of wood residuals that go to landfills and helps solid wood product companies to become more competitive and efficient by providing them with a market for their wood excesses instead of having to pay to have it landfilled.

Though cypress is a relatively small value product in the forest products sector, it is nonetheless valuable to those landowners who are able to sell their timber and derive additional income for mulch and derive a revenue source from it, for mills who are

provided a new source of revenue for their excess and residual cypress wood fiber, and for the cypress mulch producers themselves who add value in Louisiana's economy and provide jobs.

Policy considerations for cypress resource conservation and sustainability in Louisiana

Although forest product markets do an excellent job of allocating resources and even sustaining resources under normal conditions, it does not always function perfectly. In the case of cypress, there are areas in Louisiana where cypress does not and, indeed, can not regenerate. The cause is the result of a variety of actions taken in the past that have resulted in hydrologic and geomorphic changes. These changes have rendered some areas in Louisiana that once grew cypress incapable of reproducing or regenerating cypress because the sites they inhabit are fundamentally changed. It is these areas that most concern scientists and concerned stakeholders. It is also in these areas that policy considerations are most important.

Bans on harvesting cypress for mulch or discontinuing the production of cypress mulch in Louisiana can have unintended consequences. A reduction in available markets for all Louisiana forest landowners that own cypress might discourage management of cypress forestlands. Owning and managing such land is expensive. Simply eliminating harvesting and closing off markets can have the effect of rendering owners incapable of deriving a way to recoup costs and eliminates incentives to ownership and bettering the cypress resource for future revenue opportunities. In effect, the cypress resource could end up in worse condition if harvests were banned. Incentives provided by the state for willing landowners to delay or forgo harvest would help. Likewise, taxes imposed as penalties on harvests could also have negative consequences. As was stated previously, forest landowners are already considerably taxed for owning timberland, managing timberland, and selling timber. More taxes could also have a discouraging effect on active forest management and render the resource worse off than it was prior to the imposition of a tax. In addition, reduced harvests can exert a negative impact on tax collections at the local government level because severance taxes collected in parishes would decline.

There are other solutions that exist that could encourage not only the production of cypress in greater volumes on currently existing lands, but could also encourage the generation of cypress in new areas. Compensating landowners to help them generate more positive public benefits can come in several different forms. For example, programs that reimburse landowners all or a part of their costs incurred for planting cypress in critical areas could help encourage cypress establishment. Even more ambitious programs could pay landowners a certain amount above and beyond costs to ensure they are rewarded for establishing and growing cypress in critical areas where it can benefit the public. In terms of the resource that already exists, rather than eliminating markets for standing marketable cypress we can develop programs that pay cypress forest landowners not to harvest cypress for a period of time. The payment made should be equal to or greater than what they could get on the open market for their cypress if we want them to keep the timber intact. Other programs could be similar to the current Conservation Reserve Program and could pay forest landowners a certain amount of money to establish and maintain cypress in critical ecosystems for a certain period of time. Conservation easements (voluntary contractual arrangements that limit or prohibit development or harvesting on private land in exchange for considerations such as payment) could be employed and negotiated in critical areas.

Conclusion

It has been shown in this paper that cypress as a resource in Louisiana is important throughout the state and the resource is largely owned by private landowners. Although some cypress is harvested in Louisiana for the primary purpose of producing mulch, it is not the main market based product produced from cypress trees in this state. Further, not all cypress mulch comes from trees harvested exclusively for that purpose. Cypress mulch can come from other sources and the fact that other mills or other producers have a market for their by-products and residuals means that the resource that is harvested gets more fully utilized and less of it ends up in landfills. This also has the added benefit of adding economic value in our rural areas, many of which need every viable source of economic activity they can generate.

This is not to say, however, that some ecosystems inhabited by cypress are not in trouble. As the Science Working Group pointed out, some areas of coastal wetland forests are endangered and the cypress growing within some of those areas have little or no chance of regenerating. All of us as citizens of this state and this country shoulder the responsibility for coastal wetland forest loss and endangerment, because it is our past and present choices regarding land uses such as levee construction and development encroachment that have led to some if not most or all of the problems we are facing.

In these critical areas, much needs to be done. Mapping of areas with severe problems and those areas that can or can not support re-growth of cypress will soon be underway. We need to look at policy prescriptions that will advance production and conservation of coastal wetland forests not only for our current needs but for future generations as well. We will likely have the greatest success by working with landowners and developing positive ways such as incentive programs and payment mechanisms that encourage rehabilitation of coastal ecosystems that can sustain forests, encourage the creation of new areas that can generate forests, or promote the reclamation of areas where coastal wetland forests once flourished and can flourish again.

Endnotes

¹ For purposes of this paper, the term “cypress” means baldcypress (*Taxodium distichum* (L.) Rich. and pondcypress (*Taxodium distichum* var *nutans* (Ait.) Sweet) as noted in the Audubon Society Field Guide to North American Trees (Eastern Region) (See footnote 2).

² Little, Elbert L. 1980. The Audubon Society Field Guide to North American Trees (Eastern Region). New York, New York: Alfred A. Knopf, Inc. 714 p.

³ On the internet at <http://www.ncrs2.fs.fed.us/4801/fiadb/fim30/wcfim30.asp>.

⁴ Growing stock volume is the above-stump volume of living trees measured from the bark up to the treetops. It includes all living trees, the diameter of which at breast height (d.b.h.- or 1.3 m) is over 0 cm. Source: United Nations University website http://foper.unu.edu/course/?page_id=153.

⁵ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, page i of the Executive Summary.

⁶ Available on the internet at http://www.coastalforestswg.lsu.edu/SWG_FinalReport.pdf.

⁷ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, pages ix and x of the Executive Summary.

⁸ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, pages 75 and 76.

⁹ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, pages 77 and 78.

¹⁰ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, page 78.

¹¹ Coastal Wetland Forest Conservation and Use Science Working Group Final Report to the Governor of Louisiana, pages 77, recommendation #6.

¹² Data collected by the Louisiana Department of Agriculture and Forestry and by the Louisiana Forestry Association through phone interviews with cypress mulch producers in Louisiana, 2007.

¹³ One cubic foot of green cypress weighs 26.2 pounds (source: Forest Products Laboratory. 1987. Wood Handbook: Wood As An Engineering Material. Ag Handbook 72. Washington D.C.: USDA. 466 p.). Therefore, 62,680 tons of cypress mulch is equivalent to 125,360,000 pounds. Dividing 125,360,000 by 26.2 pounds per cubic feet yields 4,784,733 cubic feet of volume.