The Value of a CONSULTING FORESTER

Timber sales that involve a consultant offer value-added benefits

INTRODUCTION BY GREG CONNER, ACF

Over the years, I have been asked the same question numerous times: "If I hire you to sell my timber, will I get my money's worth?" Obviously, as ACF Consulting Foresters, we would like to say that yes, we are indeed worth the money. But can we prove that with hard analytical data? I have looked for the proof in research studies that could somehow illustrate this position, but more often than not the subject matter I have found is anecdotal in nature, with little or no data to back it up.

When I began investigating the topic, I discovered some academic research has been done on the effects that foresters (primarily public agency foresters) have on forest management. While these resources yielded some useful information, they did not account for the fact that public agency foresters are typically not involved in selling timber for private landowners.

In 1995, Dr. Carlyle Franklin of NC State University (now an ACF member) and Dr. Ian Munn of Mississippi State University published an article for *The Consultant* titled "Valuation of Consulting Foresters' Contribution to Timber Sale Prices." In their research, they found only two studies that specifically examined the effects of using a private consultant when selling timber: Hardie and Wieland (1987) surveyed Maryland landowners, but based on the data concluded that they could not definitively prove the effect consultants had on timber sales; Hubbard and Abt (1989) collected data on 45 timber sales in northern Florida and while their data demonstrated that consulting foresters had a positive effect on timber sales, the data was mixed when they broke it down by product type.

Franklin and Munn collected data from 495 timber sales in North Carolina, but used only 298 sales that were complete and pertinent to their study. They found that there were a lot of variables that made it difficult to compare consultant vs. non-consultant timber sales. However, their study also showed that consultant sales averaged 20% more than non-consultant timber sales. This study was on the right track, but it utilized a small data set, was limited only to North Carolina, and is now 20 years old.

Earlier this year, I spoke to Joe Clark about comparing consulting vs. non-consulting sales using his company's unique data set. Joe is a stumpage forester for Forest2Market (F2M), which is a data collection, analysis and consulting firm based in Charlotte, North Carolina, that serves the forest products industry. Joe agreed to do the research and present the results at the NC ACF fall chapter meeting. Much of the information presented in this article is based on the results of his analysis and the data that F2M has collected since 2010 in the U.S. Southeast.

As a neutral, independent and third-party company that serves the forest products industry, Forest2Market is perfectly positioned to investigate this question via a comprehensive study. The company does not buy or sell timber or timberland, nor does it manage any timberlands. Forest2Market's primary mission is to provide the most accurate information available to help buyers, sellers and consultants within the industry make the best business decisions possible.

Now I can honestly say, "YES," we are worth it and have the data to prove it. But to go one step further, an Attorney/Registered Forester I use suggested that the more important point is that the owner will get his money's worth if he hires us to MANAGE his land and his timber and that timber sales are just part of the management services we provide.

The Study by Joe Clark

STUDY TOOLS

Forest2Market has multiple unique databases that track prices of raw materials for the forest products industry, including stumpage prices. F2M's stumpage database covers the entire southeastern United States—from east Texas to Florida, and north to Virginia. F2M's data is unique within the industry, as it is the only comprehensive set of data that is collected at the transaction level; no survey data is used or incorporated into the database. Data are collected on both a tract and sale basis,

and the details of each transaction are methodically verified before being added to the database.

Forest2Market's stumpage database also contains timber sales data from a variety of contributors, large and small, operating within all sectors of the forest products industry. This transactional data provides a full-spectrum view of the overall market and includes information supplied by forest products companies, wood dealers, loggers, consultants and landowners. For stumpage prices in particular, Forest2Market combines all of its verified sales data together into a single database, aggregates it, and then reports an overall weighted average market price.

This critical sales data, verification process and aggregation converge to form the most secure, accurate and unbiased database of stumpage sales from across the southeastern United States. It is a powerful tool to analyze trends, markets, and aid in making daily business decisions by both buyers and sellers.

STUDY CONSIDERATIONS

There are many different factors that affect stumpage prices across the southeastern United States. Stumpage price—the price paid to a landowner for the right to fell trees and remove them from the owners' timberland—can vary dramatically across local and regional wood basins. Through the vast data points collected by Forest2Market, the results indicate that increases and decreases in price are typically tied to one of five primary factors.

- **Competition**: Wood basins are generally small in size and usually only consist of a handful of individual counties. As such, desirable timber may be located in either a highly competitive or a marginally competitive area; for example, pine sawtimber prices can vary by as much as $8-12 per ton depending on where the timber is located. Forest products companies prefer to procure wood from timber stands located as close to their mill operations as possible, and as a result, competition for resources directly affects pricing, which can vary significantly within a relatively compact geographic distance.
- **Inventory**: When inventories run low, mills are oftentimes forced to procure wood on the open market where they typically will pay a premium price. This strategy, while costly, ensures that a mill obtains the required volume to operate at its preferred production level. When mills are in a situation where they are paying a premium for wood, this allows the loggers and wood dealers who supply the mill to pay higher stumpage prices to landowners.
- **Seasonality**: Wet weather makes it difficult for loggers to supply as many loads of wood per day as they could during dry times. Timber stands that fall within the "wet weather tract" category can be harvested year round and, because of their accessibility, earn higher premiums. Loggers shift production efforts to wet weather tracts during months that typically see higher rainfall amounts, and mills subsequently pay a higher price to maintain their necessary inventories.
- **Tract Size**: The cost of moving equipment from one tract to another is a major expense for logging operations. Large tracts of 200+ acres provide loggers the opportunity to increase their production by minimizing time spent in relocation. For this reason, tracts with more volume and acreage will often secure price premiums.
  - **Tree Size and Quality**: Pricing can often appear product-based when, in fact, the size of the tree is what typically matters. In general, pine logs fall into the following size categories: 5"-7" diameter at breast height (DBH) are considered pulpwood, SMI" comprises chip-n-saw, and 12"+ are considered sawtimber. The per-ton value of trees also increases as log size increases. For example, sawtimber with a DBH of 18" commands a higher price than 12" sawtimber.

STUDY DESIGN

Munn and Franklin analyzed sale attributes that are either directly related to, or directly affect some of these factors. When setting up the analysis, we attempted to shadow the Munn and Franklin methodology to some degree. There are differences in the data collected in previous studies compared to the data collected on a daily basis by Forest2Market, but many of the variables overlap. With access to the most comprehensive database available, we designed our study around the detailed information collected by F2M on more than 15,000 timber sales and nearly 40,000 data points for the products analyzed.

The primary goal of this analysis was to distinguish the effect forestry consultants have on the outcome of timber sales (price paid for stumpage). Because of the numerous dynamics that affect stumpage pricing, all factors (or as many as possible) were held constant to properly assess the impact consultants had on a sale. To accomplish this, sales were first separated into two categories: pay-as-cut (per-unit sales) and lump sum sales. The data was then analyzed by each sale type.

With sales data separated into the two distinct types, the objective evolved into comparing sales that were most similar and that would be considered characteristic of normal per-unit and lump sum sales that consultants deal with on a regular basis. Table 1 illustrates a breakdown of the sale/tract attributes used to analyze both per-unit and lump sum sales.

Once sales were broken out into their proper segments, the effect that each sale/tract attribute had on overall sales was

	Per Unit (Sealed Bid and Negotiated)	Lump Sum (Sealed Bid)	Lump Sum (Sealed Bid)
Harvest Type	Plantation Row Thin	Clearcut	Clearcut
Timber Type	Pine Plantation	Pine Plantation	Pine Plantation
Timber Quality	Good	Good	Good
Acreage	Less Than 50 Acres	Less Than 50 Acres	(<25 ac, 26-50 ac, 51-200 ac, 200+ ac)
Product Allocation	-	Majority of volume high valued products	Majority of volume high valued products

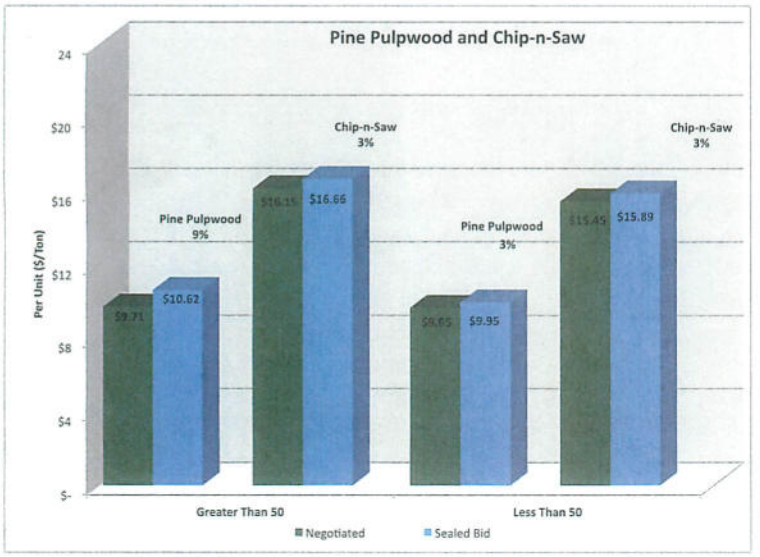
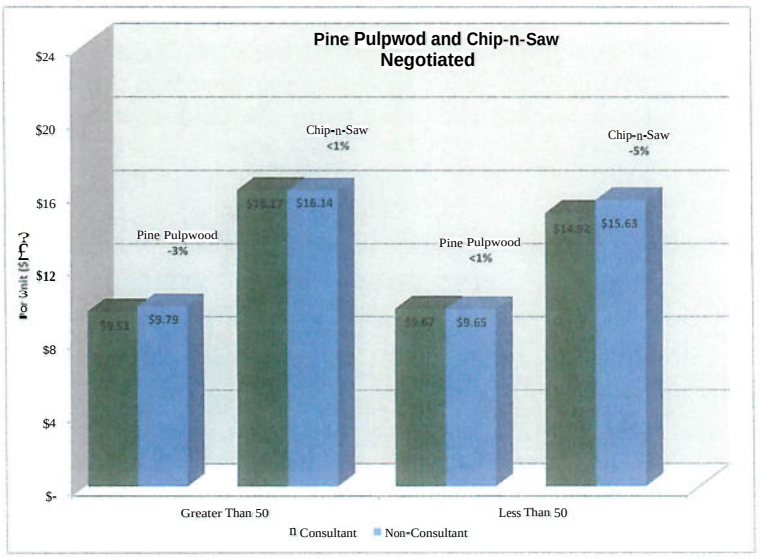
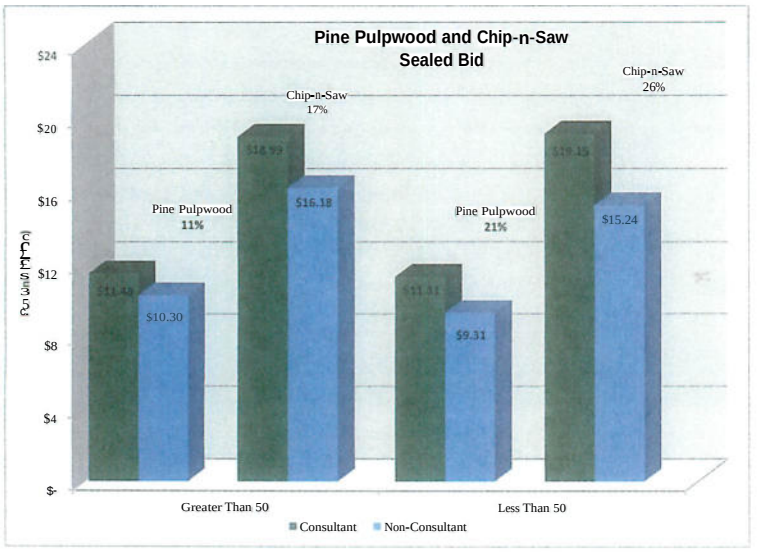


Figure 1: Comparison of per-unit sales (Negotiated and Sealed Bids) on tracts that are both less than and greater than 50 acres.





Figures 2 and 3 Comparison: Consultant vs. non-consultant sales consisting of per-unit sales (Negotiated and Sealed Bids). Tract size is categorized as less than and greater than 50 acres.

analyzed. We also began to compare sales that included a consultant and sales that did not involve a consultant.

- Per-unit sales:
  Per-unit sales data was generated from the per-unit price of products associated with those sales. The weighted average prices of pine pulpwood and pine chip-n-saw was the focus of the comparison for per-unit sales.
- Lump sum sales:
  A slightly different approach was used when comparing this sale type, as greater focus was placed on the total bid for each sale rather than the per-unit price of individual products. The reasoning for this variation is that when landowners are looking to maximize financial gain from a timber sale conducted as a lump sum, the per-unit price by product does not give them great information in terms of the benefits that a consultant provides.

  Landowners are typically able to look at net profit from a lump sum sale and glean some useful information from this number. So, in the instance of a lump sum sale, landowners would be best served by illustrating how much a consultant improves the total bid on these sales rather than the per-unit prices of the products involved.

RESULTS

Per-Unit Sales

The results begin with a very broad analysis of the data. Figure 1 illustrates a southwide average of per-unit prices for pine pulpwood and chip-n-saw, comparing negotiated vs. sealed bid per-unit sales. The data in this graph consist only of per-unit sales, with timber type being held constant at "plantation" and harvest type being held constant at "row thin;" both tract areas (less than 50 acres and greater than 50 acres) are also examined. Sealed bid sales, as stated by timber buyers in previous studies, typically bring higher per-unit prices across all products as well as both tract sizes. For tracts less than 50 acres, sealed bids brought 9% higher prices for pine pulpwood and 3% higher prices for chip-n-saw. On tracts greater than 50 acres, both products had 3% higher prices. While the data tell a story, we had to dig deeper in our analysis to find a correlation between a price increase and a consulting forester.

Figures 2 and 3 illustrate how consultants fair on per-unit sales (sealed bid and negotiated). On per-unit negotiated sale types, consultant sales do not outperform non-consultant sales. For tracts greater than 50 acres, chip-n-saw prices are less than 1% higher, and actually 3% lower on average when a consultant is involved. For tracts smaller than 50 acres, pine pulpwood prices are

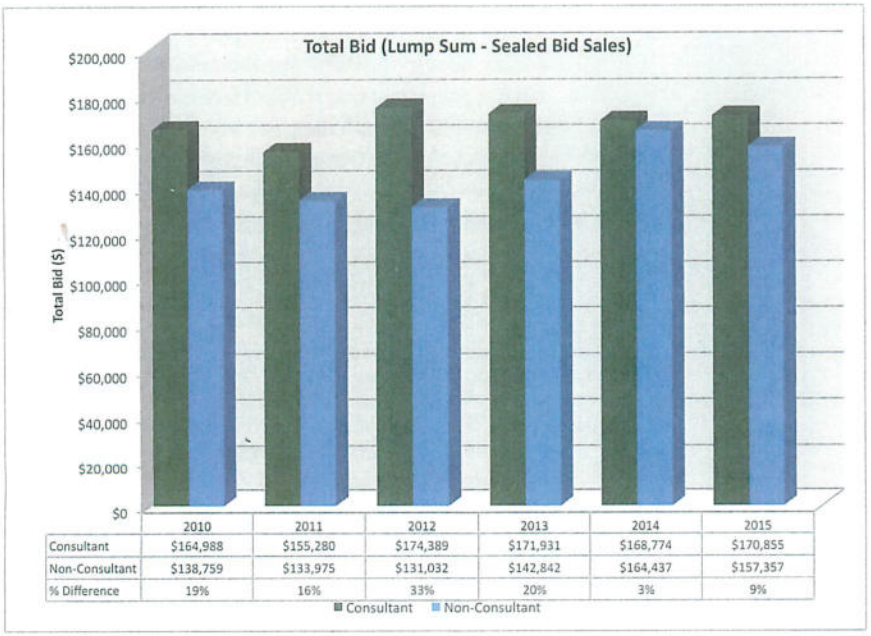
only marginally better with the aid of a consultant, and chip-n-saw is actually 5% lower.

While these findings may initially appear to suggest that consultants bring no value to this type of sale, there is a logical explanation behind the results. A consultant overseeing a first thinning may opt to negotiate the sale with a logger/dealer that they work with often, ensuring the job will be done correctly and up to the landowner's/consultant's high standard. First thinnings for small, private landowners are not typically profit-driven and because of this fact, consultants are inclined to sacrifice price premiums at this stage in order to establish positive working relationships.

Conversely, per-unit sealed bid sales data illustrates the value of a consulting forester. On both tract sizes, consultant sales outperformed non-consultant sales by a significant margin. On tracts greater than 50 acres, consultant involvement brought 11% higher prices for pine pulpwood, and 17% higher prices for chip-n-saw. On tracts less than 50 acres, consultant sales brought 21% higher prices for pine pulpwood, and 26% higher prices for chip-n-saw.

LUMP SUM SALES

The analysis of lump sum sales began very broadly as well. Figure 4 highlights consultant vs. non-consultant lump sum sales, and this graph does not hold any variable constant that might otherwise impact total bid; the only constant included is the involvement of a consultant with the sale. The data illustrates a consistent pattern of higher total bid sales when a consultant is involved. It is also important to note the yearly fluctuations; 2012 demonstrates a 33% increase in consultant sales over non-consultant sales, while 2014 shows a much lower 3%. However, the data show that average sales that included a consultant from 2010-2015 YTD brought a total bid that was 17% higher.



	2010	2011	2012	2013	2014	2015
Consultant	$164,988	$155,280	$174,389	$171,931	$168,774	$170,855
Non-Consultant	$138,759	$133,975	$131,032	$142,842	$164,437	$157,357
% Difference	19%	16%	33%	20%	3%	9%

Figure 4: Comparison of consultant vs non-consultant sales consisting of lump sum sales (Sealed Bids), 2010-2015 YTD. Average total bid for both consultant and non-consultant sales.

As staled previously, there are a number of variables that can affect the outcome presented below in figure 4. Because of this, many of the primary factors were held constant during this step of the analysis to gain a more concrete perspective on the impact consultants have on lump sum sales.

One of the more contentious arguments referenced in Munn (1995), and one still heard quite often today, is that consultants typically work with larger, premium tracts and therefore skew the data, as a higher quality and higher volume of timber will obviously bring a higher price. To account for these factors, figure 5 shows consultant vs. non-consultant sales that took place on tracts less than 50 acres where the quality of the timber involved was described as "good/"

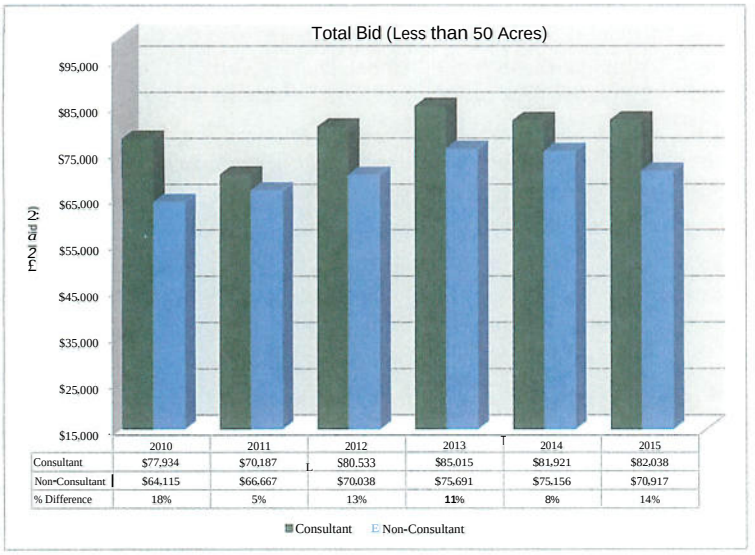
The results demonstrate that when acreage is restricted to smaller tracts, consultant involvement still increases the average total bid over sales that do not involve a consultant. This increase is not as dramatic as the data in the previous scenario, but it still represents a consistent 11% increase in the total bid received by the landowner over a five year period.

Another assumption often cited regarding the higher prices that consultants typically bring is that they only work on tracts with large volumes of higher-value products (i.e. sawtimber). We examined the data based on this argument in two separate methods: holding type of harvest constant, and analyzing product allocation.

Figure 6 shows the results of holding the harvest type constant at "clearcut." This harvest type was chosen because it is a reasonable assumption that when clearcuts take place, the majority of the volume is in higher-value products. Figure 7 presents a more defined look at product allocation, as it shows consultant vs. non-consultant sales where pine sawtimber makes up 26%-75% of the volume of the sale, as well as all of the other factors examined before this. In both cases, the same pattern illustrated in previous charts reveals itself yet again: sales involving consultants consistently bring higher total bids when compared to sales that do not involve consultants.

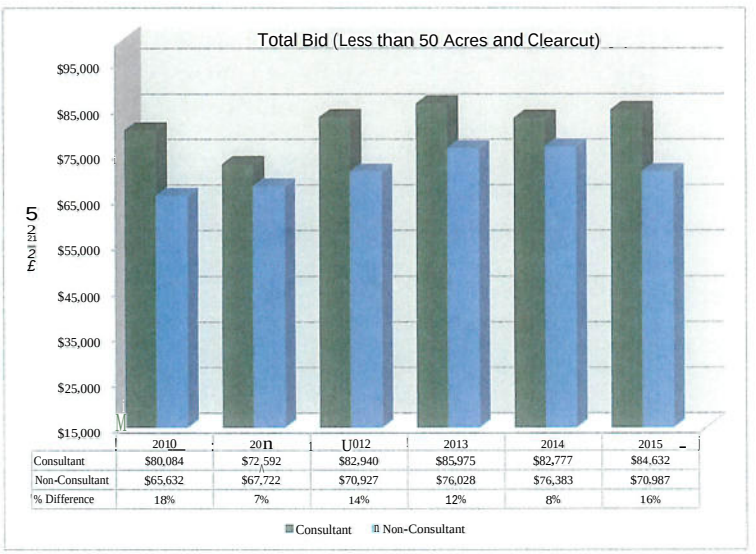
When harvest type was held constant at "clearcut" the average increase in total bids for consultant sales was 15%. When product allocation is more strongly defined (sawtimber being 26-75% of volume), the average increase in total bid was 17% while the per-unit sawtimber price on these consultant sales was 6% higher on average. Not only are the total bids higher, but the per-unit price for sawtimber on consultant sales is also consistently higher as well.

The last view of the data is shown in figure 8, which illustrates that consultants improve the total bids that landowners receive across the spectrum of acreage. Whether it is a very small tract that is less than 25 acres or a large contiguous tract of 200+ acres, consultants consistently bring a higher total bid. This data set shows that consultants bring a very

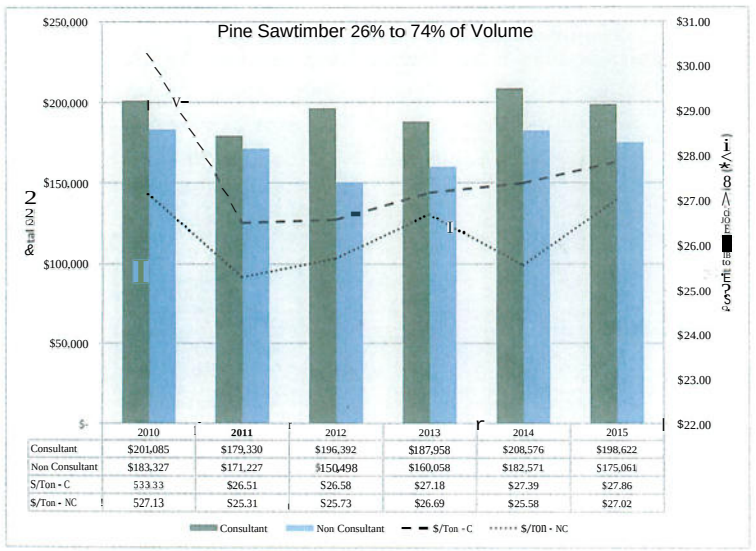


	2010	2011	2012	2013	2014	2015
Consultant	$77,934	$70,187	$80,533	$85,015	$81,921	$82,038
Non-Consultant	$64,115	$66,667	$70,038	$75,691	$75,156	$70,917
% Difference	18%	5%	13%	11%	8%	14%

Figure 5: Comparison of consultant vs non-consultant sales consisting of lump sum sales (Sealed Bids) on tracts less than 50 acres and timber quality described as "good," 2010-2015 YTD. Average total bid for both consultant and non-consultant sales.



	2010	2011	2012	2013	2014	2015
Consultant	$80,084	$72,592	$82,940	$85,975	$82,777	$84,632
Non-Consultant	$65,632	$67,722	$70,927	$76,028	$76,383	$70,987
% Difference	18%	7%	14%	12%	8%	16%



	2010	2011	2012	2013	2014	2015
Consultant	$201,085	$179,330	$196,392	$187,958	$208,576	$198,622
Non Consultant	$183,327	$171,227	$150,498	$160,058	$182,571	$175,061
$/Ton - C	533.33	$26.51	$26.58	$27.18	$27.39	$27.86
$/Ton - NC	527.13	$25.31	$25.73	$26.69	$25.58	$27.02

Figures 6 and 7: Comparison of consultant vs. non-consultant sales consisting of lump sum sales (Sealed Bids) on tracts less than 50 acres, timber quality described as "good," and product allocation weighted toward higher value products, 2010-2015 YTD. Average total bid for both consultant and non-consultant sales.

Whether It is a very small tract that is less than 25 acres or a large contiguous tract of 200+ acres, consultants consistently bring a higher total bid.

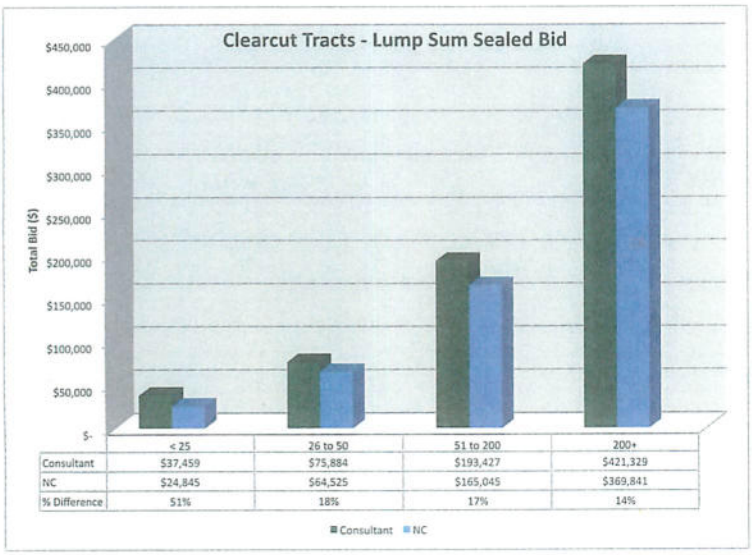
high value to small (<25 acre) tract sales, raising the total average 51% over bids with no consultant involvement. Consultants have success in the other three acreage categories as well, bringing in 18%, 17% and 14% higher total bids, respectively.

SUMMARY

Sales that involved a consultant in the process—whether it was a per-unit or lump sum sale—brought higher value to the landowner. On per-unit sales (sealed bids in particular), sales that involved consultants exceeded the non-consultant sale prices by no less than 11%. However, consultants on per-unit negotiated sales did not perform as well, with prices remaining very near (and in some cases below) what non-consultant sales brought in.

As stated earlier, the obvious explanation for this is that on most first thinnings, which was the focus of the per-unit sale type, the main objective for the landowner/consultant is not financial gain. There are a number of objectives for first thinnings, including maintaining or improving the overall health of stand, improving wildlife habitat for certain species, or improving growth of higher quality trees in the stand. But financial gain is not necessarily a priority at this stage of forest management and there is willingness to sacrifice a price premium in order to gain assurance that their client's land is being cared for when the harvester enters the stand. The premium realized in per-unit sealed bids also demonstrates that consultants are able to earn a premium when financial gain is a higher priority.

The data also showed that consultants did equally well on lump sum sales, bringing an average increase of 12% on total bids. Not only did the trend hold over time, but it also held over various tract sizes, with consultant sales bringing higher total bids on all four separate acreage categories: 25 or less: 51%; 26 to 50: 18%; 51-200: 17%; and 200+: 14%. As expected on



	< 25	26 to 50	51 to 200	200+
Consultant	$37,459	$75,884	$193,427	$421,329
NC	$24,845	$64,525	$165,045	$369,841
% Difference	51%	18%	17%	14%

Figure 8: Comparison of consultant vs. non-consultant sales consisting of lump sum sales (Sealed Bids) that were clearcut and timber quality described as "good," 2010-2015 YTD. Acreage has been categorized as less than 25 acres, 26-50 acres, 51-200 acres and 200+ acres. Average total bid for both consultant and non-consultant sales.

lump sum bids, the per-unit prices associated with each product were higher when a consultant was involved.

CONCLUSION

While this analysis does not definitively prove that hiring a consulting forester on a timber sale will automatically increase a landowner's profits, it does demonstrate that, on average, timber sales that involve a consultant do offer value-added benefits that would be in a landowner's best interest. &

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Joe Clark has worked as a stumpage forester at ForestlMarket for the last 2 years. Before joining F2M, he was a research assistant at Auburn University while earning a Master of Science in Forestry. His research examined the combined effects of drought and fertilization on the physiological processes of loblolly pine.

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ABOUT THE DATA

In order to provide credible benchmarks, every piece of data collected at Forest2Market goes through a rigorous validation and standardization process before being entered into the database. Forest2Market's staff of foresters carefully reviews the market variables affecting timber prices and uses a data normalization process to account for excess variability, which allows only market factors to influence prices. Programmed database checks of new sales against old sales have also been put in place to prevent duplicates. Once each data point has been inspected and validated, it is then incorporated into the final database for customer use.

Another reason Forest2Market's database is so robust is the supplemental data that is collected with each sale. While volume and product prices comprise the foundation of the data, a number of additional sale and tract attributes are also reported and verified on each individual transaction. All of these attributes provide an intensive, high level of detail that helps individuals glean valuable information regarding particular timber sales. Supplementary sale and tract attributes include:

Tract Attributes	Sale Attributes
Accessibility	Buyer Type
loggability	Seller Type
Quality	Price by Product
Stand Type	Volume by Product
Location	Type of Sale
% SMZ	Species
Miles of Road 3uilding	Average DBH (Diameter at Breast Height)

Table 1: Description of sale type analyzed, along with sale and tract attributes held constant during analysis.