



# An Integrated Digital Caliper-PC Measurement System For Shellfish with a Cost-Benefit Analysis

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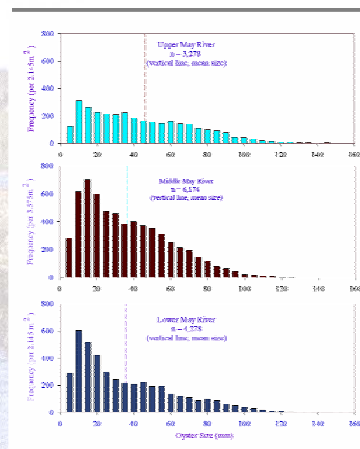
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## ABSTRACT AND OVERVIEW

Population sampling (e.g., oysters, clams, snails, crustaceans) can entail measuring hundreds of thousands of individuals each year. Until 2001, our standard procedure was to measure oysters with dial calipers to the nearest 1 mm or 0.1 mm, calling out the measurements to an individual scribe who recorded the data from one to four individuals, each measuring simultaneously. After completing the measurements from a sample, the data had to be entered into a PC (e.g., Access database) by one person and then proofed against the handwritten copy by two individuals prior to data analysis. The entire process was extremely time-consuming and fraught with errors. Data proofing often revealed the omission of entire columns of data. Also, the scribe could enter the dictated numbers incorrectly without later recourse. In 2001, we began utilizing a digital (induction) caliper system from Fowler, Inc. that could be interfaced with a Windows-based PC. The software can be programmed to place data directly into the program of your choice (e.g., Excel, Access).

Currently, we use a dedicated Access database designed for a particular project. It also incorporates 'input masks', a defined 'field size' and 'validation rules' to make entry easier and less error-prone. We have a protocol that we follow and the system has worked now for several years without problems and with little or no down time. This system is much faster than the manual method and eliminates many steps where common errors were encountered in the past. The time savings is so great that the system has paid for itself in less than one year.



Time-Cost Savings Comparisons		
	Manual	Digital
# Oysters measured	10,000	10,000
Man-hours to measure	80	20
# People dedicated	3-6	2-4
Man-hours to enter and proof	18	1.5
Total Manhours	98	21.5
Time Savings		76.6
Money Savings		\$758
Total No. of Oysters Measured		350,000
Annual time (h) savings		2,680
Annual \$ SAVINGS (@\$9/h)		\$26,532

- ### Significant Advantages
- ✓ Data go directly into a dedicated database (Excel, Access, other via WinWedge Software)
  - ✓ Reduces data entry errors
  - ✓ Hardcopy as data entered
  - ✓ Eliminates proofing; speeds data collection
  - ✓ Requires fewer people; saves time & money
  - ✓ Improves morale

### Specifications and 2005 Costs (see photos)

❖ A- Induction Calipers, Fowler Ultra-Cal IV (4)	\$572
❖ B- GagePort Interfaces (2) & Backplane (1)	\$935
❖ C- WinWedge Software (TAL Tech)	\$220
❖ D- Opto cable from caliper to GagePort (4) & PC cables (1)	\$735
❖ E- Foot pedals and cable connectors (4)	\$60
❖ Our 4 caliper system's total cost	\$2,522

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