PIDBA (Paleoindian Database of the Americas)
Site and Artifact Distributions in Late Pleistocene North America

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To explore the site, simply Google ‘PIDBA’... we have made a lot of changes recently!

Abstract:

What’s in PIDBA?

PIDBA has been used to develop and test settlement models, such as the ‘draping area’ model developed by Anderson and turned and refined by Miller and Smallwood (Anderson 1990a, 1998b; Miller 2011, Smallwood 2012). Thulman et al. (2009) divided the lower Southeast into Clovis and instantaneous post-Clovis periods and compared core use in northern and central Florida interpreted as discrete group ranges, and possible changes over time. All of the data used in these studies has been posted on or come from PIDBA.

Using PIDBA Data to Develop Paleoindian Settlement Models

PIDBA has been used to develop and test settlement models, such as the ‘draping area’ model developed by Anderson and turned and refined by Miller and Smallwood (Anderson 1990a, 1998b; Miller 2011, Smallwood 2012). Thulman et al. (2009) divided the lower Southeast into Clovis and instantaneous post-Clovis periods and compared core use in northern and central Florida interpreted as discrete group ranges, and possible changes over time. All of the data used in these studies has been posted on or come from PIDBA.

Mapping Clovis and Untyped Fluted Points

Data exists for only a few post-Clovis types, such as Folsom, Suwannee-Simpson, and Cumberland (Figure 5). Cumberland points, most common in the Midsouth, when combined with Redstone, Barnes, and other thin fluted or deeply incised based forms, appear to compose a post-Clovis horizon over much of Eastern North America, comparable to Folsom in the west. Gaps in coverage remain to be filled in and the dating of these forms needs to be confirmed.

Mapping Clovis and Untyped Fluted Points

When Clovis and untyped ‘fluted’ forms are plotted, point concentrations and low density areas are evident (Figure 5). A light scattering of ‘fluted’ points is evident just about everywhere north of the ice sheets, with denser concentrations restricted to areas around quarries, along or near major rivers, and at major ecotones, particularly in Eastern North America. Some areas were clearly favored, while others were apparently avoided.

Exploring Colonization Routes: The Baja California/Colorado River Model

The Colorado River and Sonora may have been routes into the interior, based in part on the large numbers of fluted points in Sonora (Figure 13). A heavy scattering of Clovis-like points across Baja California (Sanchez 2010). Eastern North America, with its remarkable fluted point tradition, may have thus been initially settled from the southwest or south. The Colorado River and its tributaries (Anderson 2013). The Florida Strait is an obvious route into the Southeast from Mexico (Gregg and Donoghue 2004: Appendix II, as presented in Table 1.}

Evidence for Range Extent and Possible Contraction Over Time

Younger Dryas, noted by apparent declines in numbers of diagnostic projectile points across the region as well as possible decreases in group annual numbers in the southeastern United States (Figure 12). The Younger Dryas, noted during the Younger Dryas (Stuiver and Reimer 1993; Stuiver et al. 1998), was a period of rapid climate change occurring when temperatures declined and the Southeast was characterized by the most pronounced changes in the amount of area of the Coastal Plain submerged or exposed than at any other time during the Late Pleistocene, greatly exceeding the changes that took place during MWP-1A. The southeastern United States was characterized by the most pronounced changes in the amount of area of the Coastal Plain area than during preceding Clovis times. The area of the Southeast derived from the available paleoecological data and prior studies. The Southeast derived from the available paleoecological data and prior studies. The Southeast derived from the available paleoecological data and prior studies. The Southeast derived from the available paleoecological data and prior studies. The Southeast derived from the available paleoecological data and prior studies.
PIDBA (Paleoindian Database of the Americas): Site and Artifact Distributions in Late Pleistocene North America

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Abstract
The Paleoindian Database of the Americas (PIDBA), available on-line at http://pidba.utk.edu compiles information from multiple sources to assist archaeologists in their research. PIDBA contains locational data, attribute, and image data on over 30,000 projectile points, blades, blade cores, and other artifact categories, together with distribution maps, radiocarbon dates, links to other online sources, and bibliographic references. Zooarchaeological and bioarchaeological categories are currently under development. PIDBA highlights an important and positive aspect of Paleoindian archaeology, namely the sharing of primary data.

PIDBA: An Introduction
The compilation and dissemination of primary data from multiple sources and across large areas in electronic form is one of the major challenges facing the archaeological profession in the twenty-first century. The Paleoindian Database of the Americas (PIDBA) at http://pidba.utk.edu is one such database (Figure 1), another is the Digital Index of North American Archaeology at http://ux.opencontext.org/blog/archaeology-site-data/ dedicated to linking site file data over large areas for research and resource management purposes (Figure 2). To learn more about these projects, simply Google ‘PIDBA’ or ‘DINAA’.
Figure 1. The PPIDBA Main Page. To learn more, Google ‘PIDBA’ or go to at http://pidba.utk.edu!
Figure 2. The Digital Index of North American Archaeology as of 20 September 2013, a project linked with PIDBA and also directing to integrating site file data over large geographic scales. Dots do not refer to exact site locations, but to groups of five sites whose position has been randomly assigned within arbitrary 10x10km grid cells (about the size of a USGS 7.5’ Quadrangle). [http://ux.opencontext.org/blog/archaeology-site-data/](http://ux.opencontext.org/blog/archaeology-site-data/)

**What’s in PIDBA?**

PIDBA contains locational data, attribute, and image data on over 30,000 projectile points, blades and blade cores, and other artifact categories, together with artifact distribution maps, compilations of radiocarbon dates, links to other online sources, and over 2600 bibliographic references. We encourage contributions and will happily include any data or reference that deals with the peopling of the Americas.
Mapping Clovis and Untyped Fluted Pointa

When Clovis and untyped ‘fluted forms’ are plotted (Figure 3), point concentrations and low density areas are evident. A light scattering of fluted points is evident just about everywhere, although denser concentrations still appear to be restricted to areas around quarries, along or near major rivers, or at major ecotones (Anderson 1990, Miller 2011).

Figure 3. All reported Clovis and Clovis Variants, plus points designated as ‘fluted’ but not yet assigned to a specific type.

Mapping Paleoindian Artifacts: Post-Clovis Projectile Point Distributions
Reasonably complete samples only exist for a few post-Clovis types, such as Folsom, Suwannee-Simpson, and Cumberland (Figure 4). Cumberland points, most common in the Midsouth, when combined with Redstone, Barnes, and other full fluted or deeply indented based forms, appear to comprise a post-Clovis horizon over much of Eastern North America, although major gaps in coverage remain to be filled in, and the dating of these forms needs to be confirmed.

Figure 4 Presumed Post-Clovis, initial Middle Paleoindian Projectile Point Types: Folsom, Redstone/Cumberland/Barnes/Holcombe/Vail, and Suwannee/Simpson forms. The distribution of Folsom and the Eastern forms show remarkably little overlap.

Using PIDBA Data to Develop Paleoindian Settlement Models

Distributional maps produced using PIDBA data can be used to suggest where past peoples were located on the landscape and in what incidence. Some areas were clearly favored, while others were apparently avoided. PIDBA has been used to develop and test settlement models, such as the ‘staging area’ model (Anderson 1990a, 1990b; Miller 2011, Smallwood 2012). Thulman (2006, 2009) identified distinctive clusters of Clovis and immediate post-Clovis points in different portions of north-central Florida interpreted as discrete group ranges, and possibly changes over time. All of the data used in these studies has been posted on PIDBA.
Figure 5. Paleoindian Staging Areas in Eastern North America (from Anderson 1990a:188, 190; Smallwood 2012)

Figure 6. Recent GIS analyses by Miller (2011) has demonstrated that the intersection of rivers, major ecotones, and chert sources were places that were favored Clovis settlement locations.
Exploring Colonization Routes: The Baja California/Colorado River Model

PIDBA data has also been used to explore possibly colonization routes into the Americas (Anderson and Gillam 2000; Anderson 2013). The Colorado River and Sonora may have been routes into the interior, based in part on the large numbers of fluted points in Sonora. Eastern North America, with its remarkable fluted point tradition, could have been initially settled from the southwest or south.

Exploring Colonization Routes: The Role of Sea-Level Change

What was the impact of sea level change in the Late Pleistocene on human settlement? Several of us explored this question, in a paper published in the conference volume (Anderson et al. 2013).
The amount of land exposed or submerged over time on the continental shelf in the vicinity of the southeastern United States was calculated from ca. 20,000 to 10,000 years ago based on sea level reconstructions (Balsillie and Donoghue 2004a:Appendix II, 2009) (Table 1, Figures 10 and 11). First, there were periods when the seaward margin of the Coastal Plain was fairly stable, and other times when it was changing rapidly. As expected, rapid sea level rise is indicated from ca. 14,308 to 13,928 cal yr BP, roughly coincident with Meltwater Pulse 1A (MWP-1A), and afterwards, during the Younger Dryas and initial Holocene, from ca. 12,933 to 9,981 cal yr BP, during which Meltwater Pulse 1B (MWP-1B) occurred. The data show that while the average annual rise in sea-level was greatest during the MWP-IA interval, the area submerged or exposed on the Coastal Plain, both overall and per year, was much greater during portions of the Younger Dryas and afterwards. The Younger Dryas/initial Holocene in the vicinity of the southeastern United States, in fact, these data demonstrate, was characterized by the most pronounced changes in the amount of area of the Coastal Plain submerged or exposed than any time during the Late Pleistocene, greatly exceeding the changes that took place during MWP-1A. The analysis shows that the amount of sea level rise or fall cannot accurately predict the amount of land submerged or exposed. The Younger Dryas and immediately afterward may have been a very difficult time for people living near the coast in the southeastern Coastal Plain. Changes in settlement reported early in the Younger Dryas—notably apparent declines in numbers of diagnostic projectile points across the region as well as possible decreases in group annual ranges, may be related to these changes in sea-level.
Table 1. Sea-level fluctuations and their impact on the geographic extent of the Gulf and southern Atlantic Coastal Plain, ca. 20–10k cal yr BP.

<table>
<thead>
<tr>
<th>Cal Yr BP</th>
<th>Sea Level (m AMSL)*</th>
<th>Total area (km²) exposed (0 m AMSL baseline)</th>
<th>Interval (years)</th>
<th>Δ sea level during interval (m)</th>
<th>Avg. sea level rise per year (cm)</th>
<th>Total area lost (km²) / gained (+) during interval</th>
<th>Avg area lost per year (km²) / gained (+) per year</th>
<th>Percent of entire Coastal Plain lost (km²) / gained (+) during interval**</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,216</td>
<td>-127.0</td>
<td>556,192</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-80,81/7.49</td>
<td>-7.49/0.08</td>
<td>-0.48%</td>
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<tr>
<td>19,139</td>
<td>-112.8</td>
<td>529,111</td>
<td>1079</td>
<td>-0.1</td>
<td>0.01</td>
<td>0/0.00</td>
<td>0/0.00</td>
<td>0.00%</td>
</tr>
<tr>
<td>18,053</td>
<td>-112.8</td>
<td>528,111</td>
<td>1086</td>
<td>-0.1</td>
<td>0.01</td>
<td>0/0.00</td>
<td>0/0.00</td>
<td>0.00%</td>
</tr>
<tr>
<td>18,692</td>
<td>-101.1</td>
<td>519,636</td>
<td>1361</td>
<td>11.7</td>
<td>0.86</td>
<td>-8475/6.23</td>
<td>-6.23/0.06</td>
<td>-0.50%</td>
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<tr>
<td>18,174</td>
<td>-98.4</td>
<td>516,982</td>
<td>1515</td>
<td>2.7</td>
<td>0.18</td>
<td>-2674/1.76</td>
<td>-1.76/0.06</td>
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<tr>
<td>14,368</td>
<td>-92.9</td>
<td>551,582</td>
<td>868</td>
<td>5.5</td>
<td>0.64</td>
<td>-5380/6.21</td>
<td>-5.21/0.06</td>
<td>-0.32%</td>
</tr>
<tr>
<td>14,044</td>
<td>-80.0</td>
<td>496,470</td>
<td>264</td>
<td>12.9</td>
<td>4.89</td>
<td>-15112/6.24</td>
<td>-5.74/0.06</td>
<td>-0.89%</td>
</tr>
<tr>
<td>13,928</td>
<td>-73.0</td>
<td>485,780</td>
<td>116</td>
<td>7.0</td>
<td>6.03</td>
<td>-11320/6.79</td>
<td>-5.79/0.06</td>
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</tr>
<tr>
<td>13,499</td>
<td>-71.9</td>
<td>483,005</td>
<td>410</td>
<td>1.1</td>
<td>0.26</td>
<td>-2075/1.44</td>
<td>-1.44/0.06</td>
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<tr>
<td>13,236</td>
<td>-69.1</td>
<td>478,813</td>
<td>233</td>
<td>2.6</td>
<td>1.26</td>
<td>-4262/1.44</td>
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<tr>
<td>13,013</td>
<td>-65.0</td>
<td>465,983</td>
<td>263</td>
<td>4.1</td>
<td>1.56</td>
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<td>-3.18/0.06</td>
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<tr>
<td>12,933</td>
<td>-67.6</td>
<td>474,216</td>
<td>80</td>
<td>-2.6</td>
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<td>6255/66.69</td>
<td>66.69/3.18</td>
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<tr>
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<td>-48.8</td>
<td>413,988</td>
<td>408</td>
<td>18.8</td>
<td>4.61</td>
<td>-58220/5.12</td>
<td>-5.12/0.06</td>
<td>-3.56%</td>
</tr>
<tr>
<td>12,044</td>
<td>-40.4</td>
<td>374,769</td>
<td>481</td>
<td>8.4</td>
<td>1.75</td>
<td>-39219/5.14</td>
<td>-5.14/0.06</td>
<td>-2.32%</td>
</tr>
<tr>
<td>11,502</td>
<td>-39.0</td>
<td>385,201</td>
<td>542</td>
<td>0.9</td>
<td>0.17</td>
<td>-6568/12.12</td>
<td>-12.12/0.06</td>
<td>-0.39%</td>
</tr>
<tr>
<td>11,016</td>
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<td>380,881</td>
<td>480</td>
<td>-3.4</td>
<td>-0.70</td>
<td>18120/37.37</td>
<td>37.37/1.07</td>
<td>1.07%</td>
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<tr>
<td>10,509</td>
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<td>309,837</td>
<td>507</td>
<td>11.7</td>
<td>2.30</td>
<td>-76254/60.02</td>
<td>-60.02/1.93</td>
<td>-4.52%</td>
</tr>
<tr>
<td>9,981</td>
<td>-25.0</td>
<td>246,886</td>
<td>525</td>
<td>6.2</td>
<td>1.18</td>
<td>-50502/113.55</td>
<td>-113.55/3.34</td>
<td>-3.54%</td>
</tr>
</tbody>
</table>

*Data from Basslie and Donohue 2004, Appendix II, Gulf of Mexico Total Data Set: 7-Point Floating Average

**Extent of Coastal Plain in Study Area is 1,690,270 Square Kilometers
Figure 10. Study area boundaries and shorelines at selected intervals along the Atlantic Coast, 20-10k cal yr BP based on sea level data from Balsillie and Donoghue 2004: Appendix II, as presented in Table 1.

Figure 11. Area of the Coastal Plain lost or gained in the study area in square kilometers during specified intervals from ca. 20–10 cal yr BP (based on the data in Table 1, derived from sea level values in Balsillie and Donoghue 2004: Appendix II).

Enhancing Accessibility: PIDBA Images

For several years images of Paleoindian artifacts have been available on PIDBA. For most datasets all the artifact images are displayed at once (Figures 12, 13). Clicking on individual artifacts gives access to a high resolution picture.
Figure 12. Georgia Artifacts in PIDBA, Viewed All at Once (Images and data courtesy R. Jerald Ledbetter).
Evidence for Range Extent and Possible Contraction Over Time

Lithic raw materials were used over areas up to several hundred kilometers in extent when Clovis points were being manufactured (Figure 14). In contrast, raw material occurrence appears to be more geographically restricted on presumably immediate post-Clovis (Figure 15). A contraction in group ranges may have been occurring, or perhaps in the area over which regular interaction occurred. This pattern is matched in the much more geographically restricted occurrence of post-Clovis projectile point forms like the Cumberland or Suwannee-Simpson types which, unlike Clovis, are found in greatest incidence within areas no more than a few hundred kilometers in extent.
Figure 14. Clovis point incidence on four major lithic raw material categories in the lower Southeast. Most materials are found over areas several hundred kilometers in extent.
Figure 15. Cumberland, Redstone, and related ‘full-fluted’ point incidence on four major lithic raw material categories in the lower Southeast. Most materials occur over areas that are smaller than those observed during preceding Clovis times.

Evidence for a Post-Clovis Decline in Population?

Tallying the diagnostic projectile point sample from PIDBA suggests that in the Southeast a significant decline occurs between Clovis and presumably immediate post-Clovis full fluted forms (Figure 16). The data suggest a population rebound occurred later in the Paleoindian era.
from the full fluted to unfluted and then to Dalton forms. The increase may be far more pronounced then indicated since Dalton points are only systematically recorded in a very few states.

Figure 16. Possible population or settlement trends in the Southeastern United States indicated by numbers of projectile points in the PIDBA dataset.

Find Out More About PIDBA!

Additional details on PIDBA may be found in a recent article in *Archaeology of Eastern North America*, copies of which are available on request, or from the Eastern States Archaeological Federation (Anderson et al. 2010).
Figure 17. PIDBA has been described in detail in *Archaeology of Eastern North America* (Anderson et al. 2010).

**Problems of Representativeness**

Complicating analyses are problems of sample bias and representativeness, which is influenced by factors such as the extent of prior collection and recording activity, the extent of agricultural or other land clearing, and many other factors (Shott 2002, Prasciunas 2008, Miller and Smallwood 2009). Also, while fluted projectile point forms are widely reported, later Paleoindian and Early Archaic types are unevenly reported or ignored altogether. It is hoped as more people contribute data these problems will diminish over time.

**Start Collecting Data!**

We encourage colleagues to start compiling data in those areas where recording projects have not been initiated. The Georgia Paleoindian Recording Project offers a good example of how to proceed (Figures 18, 19)(Anderson et al 1990, Ledbetter et al 2008).
Figures 18, 19. Examples of artifact data recording from Georgia. Over 2000 such forms have been produced in the past 23 years. Images courtesy of R. Jerald Ledbetter.

## Conclusions

We encourage our colleagues to contribute to this effort by submitting information in hard copy or electronic form. All data and contributors will be fully referenced and acknowledged. We thank all those who have contributed data!

## References Cited

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Anderson, David G. and J. Christopher Gillam


Anderson, David G., and Kenneth E. Sassaman


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Dyke, A. S; A. Moore, and L. Robertson

Kelly, Robert L., and L.C. Todd

Meltzer, David J.


Meyer, David and Paul C. Thistle

Miller, D. Shane

Sanchez, Maria Guadalupe

Smallwood, Ashley M.


Thulman, David K.
