

common methods of faunal procurement, domestic dogs were also important dietary staples (Wing 1980, 1981). Coe and Diehl (1980a:389) speculate that dogs may have been fed a special diet of maize to prepare them as a food source.

Pollen and macrobotanical evidence from La Venta reveal that maize was cultivated there as early as 2250 BC (Rust and Leyden 1994). Rust and Leyden (1994:181) document an increase in both the size of *Zea* pollen grains and the presence of macrobotanical maize remains through time at the site. Moreover, a sharp decline in the frequency of pollen from mangrove-related plants, paralleled by an increase in pollen indicative of forest clearance (Graminae and Cyperaceae), suggests the clearing of mangrove-filled levees for farming purposes during the Early Formative period (Rust and Leyden 1994). Maize use increased throughout this period, and the morphology of maize kernels became significantly less diverse, resulting in a dominant variety of popcorn³ by the end of the Early Formative (Rust and Leyden 1994). Rust and Leyden (1994) argue that maize cultivation at La Venta became more important during the Middle Formative period, paralleling increases in settlement and ceremonial activity at the site. They also mention the importance of beans and palm nuts in the La Venta subsistence economy (Rust and Leyden 1994:182). However, only the maize remains are quantified, making it impossible to evaluate the importance of maize relative to the other plants in the La Venta diet, or to assess whether or not beans were fully domesticated at this time.

More recent pollen evidence from San Andrés in western Tabasco, however, has pushed back the date of domesticated maize cultivation to 4800 BC (Pope et al. 2001). The initial appearance of *Zea* pollen appears at 5100 BC and corresponds with evidence of extensive forest clearing in the form of disturbance pollen. Morphological changes in *Zea* pollen grains suggest that people transformed wild teosinte into domesticated maize within a 200-year period (Pope et al. 2001). In addition, direct AMS dating by Pope et al. (2001) of *Phaseolus* seeds from San Andrés indicate that beans had become part of the diet by the end of the Middle Formative period (399 BC).

In terms of animal resources, Rust and Sharer (1988) and Rust and Leyden (1994) stress the importance of aquatic vertebrates—specifically, fish and turtles—in the diet of La Venta residents. Moreover, they suggest a status-related pattern in the consumption of larger terrestrial vertebrates like deer and dog. Apparently, significantly more large mammal remains were identified at mound sites than at non-mound sites in the La

Venta settlement area. This pattern is interpreted to represent a positive correlation between status and the consumption of larger mammalian taxa. While this pattern is intriguing, neither Rust and Sharer (1988) nor Rust and Leyden (1994) report the faunal data in raw or summarized form, making it difficult to evaluate their arguments.

Changes in ground stone technology at lowland Olmec sites also point to the increased production and consumption of maize through time. Moreover, it appears that the productivity of maize increased substantially during the second millennium BC throughout Mesoamerica. Based on data from Oaxaca, Kirkby (1973) argues that 1700–1500 BC was a critical time in the evolution and domestication of maize, in that it had become productive enough to warrant extensive forest clearing for its cultivation. Macrobotanical data from the Olmec heartland, however, place this critical domestication/productive threshold for maize about 500 years later, circa 1000 BC (see above; Rust and Leyden 1994; see also Borstein 2001). The hard-kernel popcorn variety of maize identified at La Venta would have offered better yields and storability than earlier varieties, but would have required more intensive processing and grinding (Grove 1981; Rust and Leyden 1994; B. D. Smith 2001). Thus, we can expect that changes in maize production would be reflected in changes in ground stone use. Grove (1981:389) cites a dramatic increase in grinding implements across Mesoamerica during the Early Formative period. Moreover, basalt manos and metates are ubiquitous at Formative period San Lorenzo (Coe and Diehl 1980a, 1980b). At present there is little reported concerning changes in the frequency or intensity of use of these maize-grinding tools, but Coe and Diehl (1980b:139) do mention an increase in the long-distance exchange of basalt during the Early Formative. At La Venta, an increase in basalt grinding implements through time correlates with the increase in maize density ratios (Rust and Leyden 1994:181).

Changing Settlement in the Lowlands

Settlement patterns also offer clues to changes in farming practices through time. Based on recent large-scale surveys around San Lorenzo and Laguna de los Cerros in the Coatzacoalcas and San Juan drainages, respectively, Borstein (2001) has identified a settlement shift away from lowland, riverine settings and toward upland settings around 1000 BC, well after the emergence of chiefdom-level political complexity in the region. This shift in settlement reflects a major change in subsistence