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Appendix C

Formative Period Chronology for Eastern Ecuador

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Largely on the basis of assertions by Padre Pedro Porras (1975, 1980, 1987, 1989), with qualified support from Donald Lathrap (see Marcos 1998: 312), unquestionable evidence of Formative period human settlement in at least some parts of the Ecuadorian Oriente has long been assumed. As Stephen Athens (1990) amply demonstrated in reviewing all published dates for the Fase Pastaza (Porras 1975), the stratigraphic integrity of the deposits and cultural associations of those carbon samples determined to be of Formative age from the Huasaga site are far less than certain. A proposed, lengthy, four-period chronological sequence remains unsupported by concrete evidence.

The so-called Pre-Upano phase, as described from seriation and analysis of material excavated at Huapula is also unclear. Specification of this putative early chronological period ultimately rests on two isolated radiocarbon dates for samples drawn from inadequately and inconsistently specified cultural contexts (see Athens 1990: 111–112). For the Fase Los Tayos (Porras 1980: 119–121), direct radiocarbon determinations on shell supposedly accord with thermoluminescence dates from pot sherds. These dates were used to suggest an occupation around 1500 B.C., consonant with apparent stylistic similarities of the recovered pottery to Machalilla wares (see Marcos 1998: 312–313).

The efficacy of more recent Formative dates for the Upano Tradition, on the basis of radiocarbon determinations for samples also submitted for operations at or around Huapula (Porras 1987: 296–297, 299; see Table C1), is difficult to evaluate. In short, the respective laboratory numbers, reported ages, and/or proveniences given in several sources are incomplete or inconsistent (Salazar 1998: 215–216, 228, 230; cf. Porras 1987: 296–297 with 299 and with Porras 1989: table 1; Marcos and Obelic 1998: 359; or Ziólkowski et al. n.d.: 156–157).

Temporal placement of other ceramic complexes from eastern Ecuador that Porras (1980) reported as having Formative components, including Chiguaza (1980: 123–127) and Cotundo (1980: 129–133), is founded largely on stylistic and other nonobjective criteria.

An oft-cited radiocarbon age determination of 2750 ± 440 BP from a site in the middle Upano valley that Michael Harner denominated as Ipíamais (1972: 13) is probably not meaningful. This assay had an extraordinarily large standard deviation. The sample itself may have been confused with another taken from the nearby Yaunchu site, which was under laboratory analysis at the same time (Rostoker 1996: 22). [An additional radiocarbon sample Harner collected from Yaunchu was clearly associated with Upano pottery (i.e., Red Banded Incised ware). Upon subsequent assay, it yielded a date well within the Regional Development period (Rostoker 1996: 22).]

Even a cursory review of the limited, scattered radiocarbon evidence of the Oriente available through 1990 reveals an obvious pattern. Despite recovery of carbon of probable Formative age at several places identified as prehistoric sites on other grounds—mainly the presence of fragmented ancient pottery—solid evidence of Formative human settlement in the Oriente is still elusive or equivocal at best. Archaeological investigation has expanded in the Oriente over the past decade. Most of the work has been reconnaissance, survey, or mitigation in the "petroleum zone," the provinces of Napo, Pastaza, Sucumbios, and now, Orellana.

Farther south, in Morona Santiago, a more recent inquiry has been carried out at Huapula (Rostain 1999; Salazar 1998), better known as the Sangay Complex (Porras 1987, 1989). That study gave rise to a smaller project at Yaunchu, one of the sites in the middle Upano valley first recognized by Harner (1972: 13) in 1957.

If the end of the Formative was 2300 BP, roughly 200 to 500 B.C., 3 of the 17 published radiocarbon dates from the Sangay–Upano project (Rostain 1999: 89) can be construed as probable indicators of Formative period human activity at Huapula. As calibrated at the two-sigma range, one of the dated samples might easily stem from the subsequent Regional Development period instead (see Table C1).

The ranges of other two-sigma calibrated dates determined for samples from the same site straddle the chronological boundary between the Formative and Regional Development periods (see Rostain 1999: 89). Given that five samples were from somewhere near the bottom—or at least within the basal strata—of artificial mounds, it can provisionally be expected that platform construction at Huapula might have begun at around that same time (Salazar 1998: 230).

Stratigraphic excavation both on- and off-mound at Yaunchu produced only one sample determined by radiocarbon assay to be of probable Formative age. Drawn from a nonmound context, the pertinent charcoal was well-associated with Upano Tradition pottery in situ. Unfortunately, this resultant early chronological age range could not be replicated by testing other samples from the same unit drawn at approximately the same level within a single discrete cultural layer. Two such samples were both dated to well within the Regional Development period.

A few other carbon samples from the Oriente, firmly associated with prehistoric cultural material and apparently of Formative age, have been reported to the Instituto Nacional de Patrimonio Cultural del Ecuador by investigators working in the "petroleum zone," including Florencio Delgado (n.d.), José Echeverria (n.d.), and Amelia Sanchez Mosquera (n.d.). Their results need to be further substantiated with confirming objective age determinations on samples having specifiable cultural associations. If that can be accomplished, these findings will constitute the best evidence of Formative period human settlement in eastern Ecuador.

Preceramic and aceramic settlements, as well as later pottery-using societies, likely were already established at some places in the Oriente well before 500 B.C. Nevertheless, proof of their existence is almost completely lacking. Material traces of these earlier groups seem to have been thoroughly obscured by a veritable explosion of human settlement that apparently took place beginning in the first few hundred years of the Regional Development period, especially along the base of the eastern escarpment of the Andes.

It is these later societies that evidence the pattern known throughout the western hemisphere as technologically Formative: more-or-less permanent nucleated settlements; widespread production and use of ceramic containers and other objects of fired clay; and significant reliance on food production, with a concomitant de-emphasis on gathering or hunting and other forms of wild food exploitation. The Ecuadorian Oriente is rich with evidence of the probable autochthonous development of complex society within tropically forested and other lowland settings. On the basis of the radiocarbon evidence now available, most—if not necessarily all—of these human groups appear to have been latecomers in relation to the Formative period societies of the coast and sierra, with which they have been so often and so enthusiastically compared.

Table C1
Formative Period Radiocarbon Chronology for Eastern (the Oriente of) Ecuador, by Site, according to Radiocarbon Year before Present (RCYBP)

Site, culture, and phase	Lab and lab no.	Uncalibrated date RCYBP	Probability calibrated range 68.2% (year B.C.)	Probability calibrated range 95.4% (year B.C.)	Reference
Bicundo Chico	Comisión Ecuatoriana de Energía Atómica				
unknown	CEEA 161	3140 ± 70	1500-1310	1600-1210	Bolaños et al. n.d.
Borja-Minda BO-1	Smithsonian Inst.				
Cosanga?	SI 690	2390 ± 165	800-250	850-50	Ziólkowski et al. n.d.
Chiguaza?[a]	Nishina Memorial				
Chiguaza?	N 4158	2510 ± 95	800-510	810-400	Porras 1987
Curiurcu	Comisión Ecuatoriana de Energía Atómica				
unknown	CEEA 12	2620 ± 100	910-540	1000-400	Delgado n.d.
El Avispal	Comisión Ecuatoriana de Energía Atómica				
Cosanga?	CEEA 02	3360 ± 220	1950-1400	2300-1000	Delgado n.d.
El Guayabo	Comisión Ecuatoriana de Energía Atómica				
unknown	CEEA 162	2520 ± 70	800-520	800-410	Bolaños et al. n.d.
Huapula					
Pre-Upano	Nishina Memorial				
	N 4491	4700 ± 70	3630-3370	3640-3350	Porras 1987
	N 4201	4470 ± 35	3330-3030	3350-3020	Porras 1987
Upano	Beta Analytic and Nishina Memorial				
	N 4203	3050 ± 85	1410-1130	1500-1040	Porras 1987
	N 3869	2860 ± 135	1260-860	1400-750	Marcos and Obelic 1998
	Beta 89271	2780 ± 90	1020-820	1220-790	Rostain 1999
	N 3870	2750 ± 150	1190-780	1400-400	Marcos and Obelic 1998
	Beta 106086	2360 ± 60	760-370	800-200	Rostain 1999
	Beta 89270	2310 ± 70	490-200	800-150	Rostain 1999

(*cont.*)

Table C1 (*cont.*)
Formative Period Radiocarbon Chronology for Eastern (the Oriente of) Ecuador, by Site, according to Radiocarbon Year before Present (RCYBP)

Site, culture, and phase	Lab and lab no.	Uncalibrated date RCYBP	Probability calibrated range 68.2% (year B.C.)	Probability calibrated range 95.4% (year B.C.)	Reference
Huasaga					
Pastaza	Ill. State Geological Survey and Teledyne Isotopes				
	ISGS 385	4155 ± 75	2880-2620	2900-2490	Porras 1975
	I 9159	4000 ± 100	2840-2340	2900-2200	Porras 1975
Ipíamais?[a]	Yale Univ. Geochronological Labs				
unknown	Y 617	2750 ± 440	1500-300	2100-A.D. 200	Harner 1972
Mamallacta BA-7	Smithsonian Inst.				
Cosanga?	SI 685	3445 ± 140	1930-1530	2150-1400	Ziólkowski et al. 1994
	SI 686	2615 ± 100	900-540	1000-400	Ziólkowski et al. 1994
Pata 1	Smithsonian Inst.				
unknown	Not available	2830 ± 140	1210-830	1450-750	Echeverria n.d.

Notes: Data compiled by A. Rostoker and Marco Vargas A. All calibrations were performed with OxCal software version 3.5 (Ramsey 2000). In some cases, resulting dates may differ from those published elsewhere.
[a] See Porras 1987: 299 (table note). [b] Date may pertain to the Upano Tradition at Yaunchu instead (see Rostoker 1996: 22).

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