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Food, Feathers, and Offerings: Early Formative Period Bird Exploitation at Paso de la Amada, Mexico

A thesis submitted in partial satisfaction of the requirements for the degree Master of Arts in Anthropology

by

Katelyn Jo Bishop

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ABSTRACT OF THE THESIS

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Master of Arts in Anthropology
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Professor Richard G. Lesure, Chair

Bird remains from archaeological sites have the potential to inform research on many aspects of prehistoric life. In Mesoamerica, they were a food source, as well as a source of feathers and bone. But they were also components of ritual performance, dedicatory offerings, subjects of iconographic representation, characters in myth, and even deities. Their significance is demonstrated ethnographically, ethnohistorically, and archaeologically. This thesis addresses the role of birds at an Early Formative period ceremonial center on the Pacific coast of Chiapas, Mexico. The avian faunal assemblage from the site of Paso de la Amada was analyzed in order to understand how the exploitation and use of birds articulated with the establishment of hereditary inequality at Paso de la Amada and its emergence as a ceremonial center. Results indicate that birds were exploited as a food source as well as for their feathers and bone, and that they played a particularly strong role in ritual performance.

The thesis of Katelyn Jo Bishop is approved.

Gregson Schachner
Jeanne E. Arnold
Thomas A. Wake
Richard G. Lesure, Committee Chair

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Introduction

In Mesoamerica today, birds are nearly twice as species diverse as any other class of animal, with over 1,190 different species identified (Montagnini 2006:64). This ecologically diverse region is home to many different *types* of birds, with varying physical appearances, diets, habitats, and behaviors. It is not surprising, then, that with such diversity this class of animal was so significant to prehistoric and contact period Mesoamerican cultures, and remains so today. Yet rarely are they studied in depth, because their identification requires greater than average effort due to the sheer number of species, and necessitates an extensive comparative collection. But the return on this investment is well worth it; their explanatory potential is extensive. Bird remains from archaeological sites have the potential to inform research on many aspects of prehistoric life. Most obviously, birds were a food source, sometimes even a primary food source. But they were also exploited for their feathers and bone. They were components of ritual performance, dedicatory offerings, subjects of iconographic representation, characters in myth, and even deities. Their significance in Mesoamerica is underlined and supported by ethnographic and contact-period literature, by their depiction in the codices and in iconographic representation, and by their treatment evidenced in the archaeological record.

This paper aims to address the practice of avian capture and use at an Early Formative period (1900-1000 BC) site on the coast of Chiapas in an attempt to better understand how bird exploitation and use articulated with emerging inequality. Because of the prevalence of birds in Mesoamerican ideology, ritual activity is a primary focus of this analysis. Below I identify the different motivations driving bird capture at the site of Paso de la Amada in order to understand the role that birds played in emerging inequality and the establishment of this site as a ceremonial center in the Early Formative period.

Paso de la Amada is located in the Mazatán municipality of the Soconusco region of Chiapas, Mexico (Figure 1) and was occupied throughout the Early Formative (Figure 2) (Clark 2004; Lesure 2011a:13). The site is recognized as the earliest known ceremonial center in Mesoamerica, with concomitant evidence of sociopolitical inequality. A ceremonial center is, in part, a site constructed on a large-scale and designed with respect to the cosmos (Lesure 2011b:119). Clark has argued that Paso de la Amada was designed using standard units of measure—indicating significant planning—with attention paid to alignment, size, spacing, and orientation of numerous buildings, a plaza, and a ballcourt (Clark 2004:59). A southern plaza may have been planned according to a quadripartite vision, foreshadowing the cosmological notion prevalent in later Mesoamerican ideology of the world as structured by four corners and an *axis mundi* (Clark 2004:59-60). Paso de la Amada is also home to the earliest known ball court, indicating that ritual and display were already important to the inhabitants of the site in the Early Formative period. Ballgames may have been sponsored by emerging elites in an attempt to display status and prestige to fellow residents as well as those of neighboring communities (Hill et al 1998:878), and its presence marks Paso de la Amada as part of larger Mesoamerican traditions (Lesure 2011b:119).

Ranked society in Mazatán is evident by 1650 BC at the beginning of the Locona phase, and is signaled by the onset of a two-tiered settlement pattern, elite and non-elite domestic architecture, sponsored craft specialization, differential mortuary practices, and unequal access to sumptuary goods and trade items (Clark 2004:53; Clark and Blake 1994:22). Throughout its occupation, Paso de la Amada was consistently the largest chiefdom in the Mazatán, reaching its maximum extent of about 140ha in the Locona phase (Clark 1994:462, 2004:53-54). Rank society is thought to have developed as a consequence of aggrandizers attempting to increase their own prestige and pursuing their own interests, and status was likely hereditary (Blake and Clark 1999; Clark and Blake 1994). The spatialization of status at Paso de la Amada has been analyzed using an architectural dichotomy of platform versus nonplatform residences. These are generally—but not strictly—synonymous with elite and non-elite, or higher-and lower-status, respectively (Lesure and Blake 2002, Blake 1991). The most elaborate example of platform residence is Mound 6, a chiefly residence with a series of at least six successive floors and structures whose general alignment was maintained through time (Blake 1991, 2011:99-109; Blake and Clark 1999). The continual (re-) investment in residences at Mound 6 suggests the presence of hereditary inequality (Clark 2004:57). These structures possessed domestic features like all other households, but they received significantly more architectural investment than non-platform residences (Blake et al 2006). They were also the loci of chief-sponsored community events (Blake and Clark 1999:67).

The avian faunal assemblage at Paso de la Amada is uniquely suited to contribute to the discussion on Paso de la Amada as a ceremonial center. In the natural world, there are few organisms that rival birds in variety and brightness of color (Serjeantson 2009:186). Feathers are more durable than plants and offer a wide range of hues. In addition to their remarkable natural color, birds possess one quality that few other animals do: flight. Their connection to the sky brings them closer to the gods. Twelve of the 13 volatiles in the Aztec codices are birds, each one a companion to one of thirteen Day Lords who rule over a particular day in a cycle of thirteen (Sharpe 2014b; Kendall 1992). Additionally, many species of birds are mimetic and undoubtedly impressive for their ability to speak. Some species are revered instead for their associative qualities that may be imparted upon the wearer of their feathers (Serjeantson 2009:185). Perhaps for these reasons, birds have served purposes other than solely nutritional.

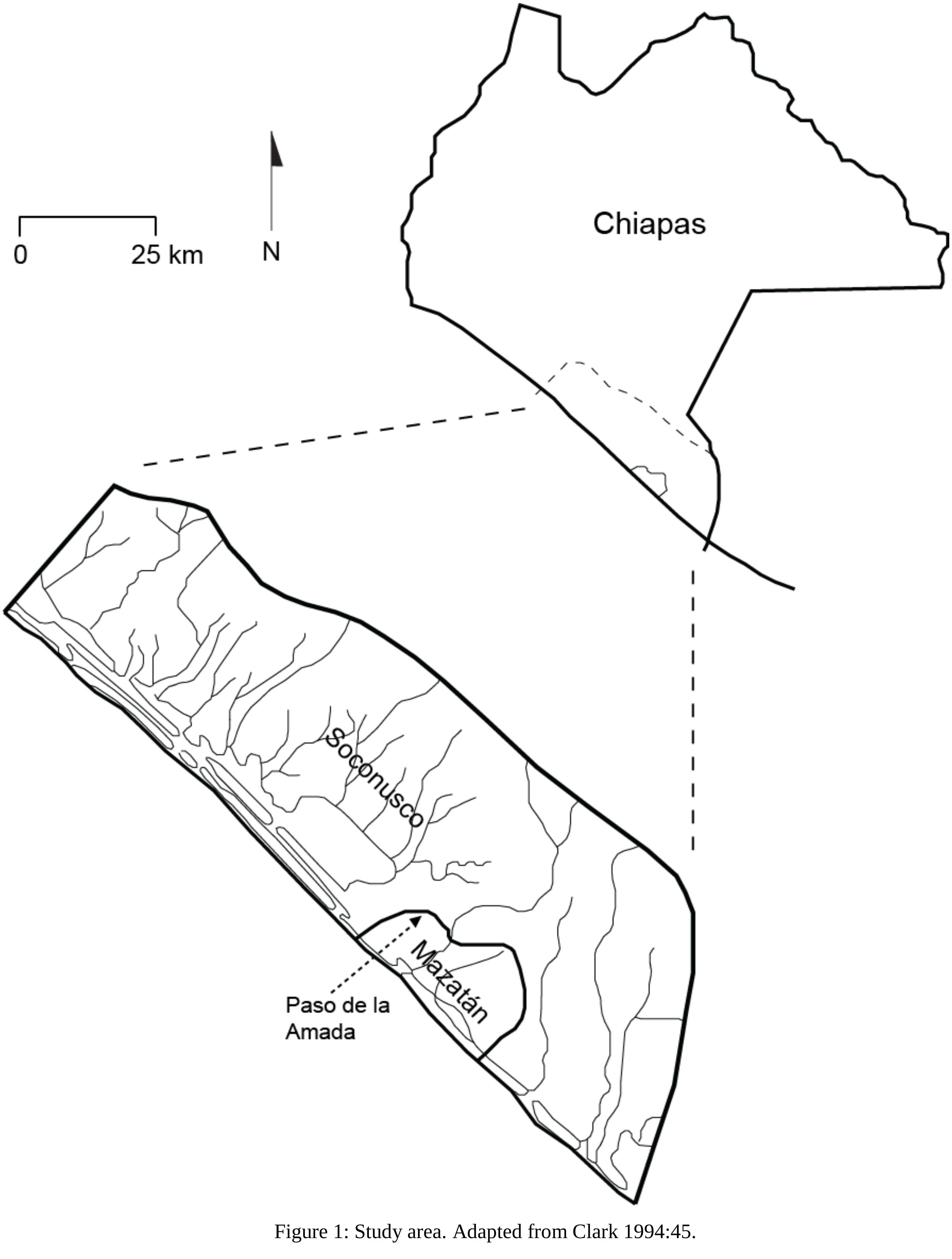


Figure 1: Study area. Adapted from Clark 1994:45.

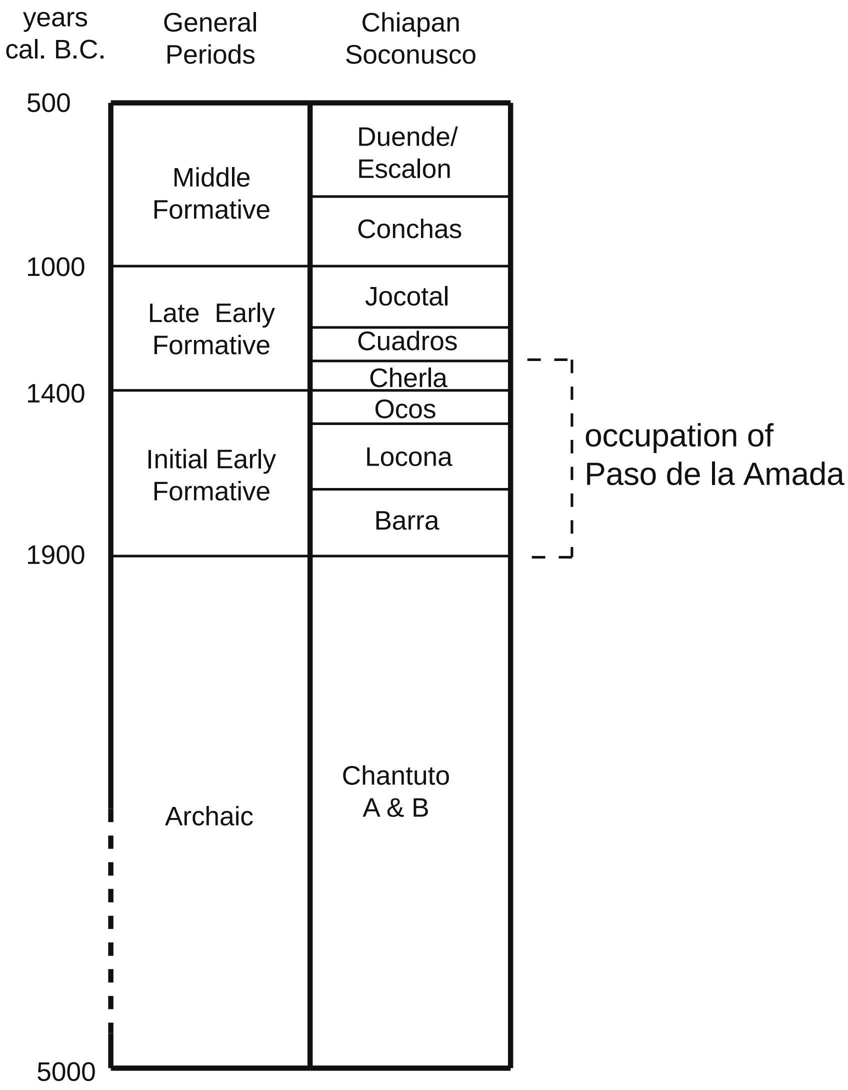


Figure 2: Phases mentioned in the text. Adapted from Lesure 2011a:Figure 1.3).

The Soconusco region in particular is home to a considerable diversity of bird species. According to the Codex Mendoza, feathers made up the bulk of the tribute the Soconusco was required to pay twice yearly to the Aztec empire, including:

> "four hundred bunches of beautiful blue feathers, sixteen hundred bunches of beautiful green feathers; eight hundred bunches of beautiful red feathers; four hundred bunches of

> beautiful turquoise feathers; eight hundred bunches of beautiful yellow feathers; one hundred sixty bird skins" (Corona Núñez 1964:102-103, Plate 47).

The Early Formative occupants of the Soconusco are referred to as the Mokaya (Voorhies 2004:1), and are thought to have been probable speakers of Proto-Mixe Zoque (Clark 1994:viii). Amongst the present day Mixe, whole birds and their feathers are used in protection rites, economic rituals, and astronomical rituals (Lipp 1991). The behavior of birds brings omens of fortune, death, ill luck, and weather, and their body parts can be used as talismans. Many of the Mixe's *naguals* (personal guardian spirits) are birds, and the qualities of the bird are related to the qualities of its human counterpart (Lipp 1991).

In the Early Formative, the residents of Paso de la Amada were capturing a wide variety of birds from the surrounding area. Some of these were eaten, some may have been plucked or skinned for their feathers, and yet others were involved in ritual display. The presence of offerings of birds and bird parts at Paso de la Amada and their depiction in ceramic medium as effigies and whistles suggest that even in the Early Formative, birds were an important component of ideology at Paso de la Amada. As a potentially controllable and manipulatable resource, birds (and their byproducts) provide one avenue through which to understand the nature of emerging social inequality at Paso de la Amada.

Analytical Strategy

In studying birds, there are many known variables that extend beyond the physical properties of the archaeological material we recover. Though a bird bone appears to be that of a single species and has distinguishing characteristics, it also, by extension to its living counterpart, possesses other important characteristics such as those related to habitat, behavior, and color. These characteristics make the bone an ideal "artifact," because each specimen ultimately provides much more information than that which immediately meets the eye. Considering these variables helps us understand the logic of *why* people exploited certain species over others. In order to understand the logic of bird capture and use at Paso de la Amada, below I discuss three motivations that drive bird exploitation in general: subsistence strategies, social use, and ritual engagement. The first, as the name implies, is concerned with the need and desire for birds as food, the second with the desire for their feathers or other products (such as bone for decorative objects) for use in personal display and social aggrandizement, and the last with the desire for birds as components of ritual activity. Each strategy has somewhat distinct archaeological correlates that facilitate the identification of these strategies in the archaeological record.

Logically, birds and bird parts can be put to a number of uses. In addition to those described above, other uses include the manufacture of bone tools from bird bone and the use of feathers in utilitarian items such as blankets. Subsistence, social, and ritual strategies are perhaps the most common, and are positively identified in both archaeological and ethnographic cases as prominent practices. They have particularly strong potential to inform our understanding of the nature of social inequality and ceremonialism at Paso de la Amada.

Like many other resources, birds and their products are controllable. However, limited means of control exist for birds as an animate resource. Non-local species whose procurement would require exchange or long-distance contact can be controlled upon arrival at the site as an incoming prestige good. More commonly, access to animals may be controlled through sumptuary rules, which prohibit or expressly forbid the exploitation and/or consumption of certain species or types of animals by individuals or subsets of the population. Both types of control are a means through which promotion and maintenance of increased social status by aggrandizers can occur. The former was not the case at Paso de la Amada, as all species utilized are presently or were likely to have been locally available. Because people at Paso de la Amada do not appear to have been importing birds, there would have been no potential point of control upon their entry into the site. Many species of birds, of all colors and qualities, were available nearby, and could have been retrieved by anyone. If no middle man or entry point was necessary, control would have had to occur through the establishment of sumptuary rules. If this were the case, we might expect access to the largest and tastiest birds, birds with the most desirable feathers, or those with the strongest symbolic significance to have been restricted or even prohibited by social aggrandizers. Restricted access along these lines can be a means of excluding others in order to maintain the status or prestige of the controlling subset of the population. Additionally, items manufactured from bird bone can be controlled, through the distribution of raw material or through the manufacturing process.

I seek to reconstruct the activities in which birds were involved, and, more generally, what sorts of practices were the end goal guiding their capture. In other words, to what purposes were these birds intended to be put when they were captured, and for what reasons were certain birds chosen over others. Each type of exploitation, subsistence-, social-, or ritual-oriented, has sociopolitical implications, and it is these that I seek to understand.

Three Motivations of Bird Capture

When considering the three exploitation strategies, it is important to note that these are infrequently wholly distinct from one another. Capture is often motivated by more than one goal;

while motivations may be unique, the material signature that is left behind may be a confusing amalgam of the material correlates of more than one strategy. How then can these strategies be isolated in the archaeological record? From the avian assemblages of a number of archaeological sites in the Americas, I distilled a series of material correlates for each exploitation strategy. Each assemblage or subset of an assemblage discussed is the result of the practice of one of the three exploitation strategies to the exclusion of others. Patterns in these assemblages have been divided for analytical purposes into the criteria of species selected, body part distribution, modification of the remains, and the context in which they are found. Together, these criteria form the expected material correlates of each type of exploitation strategy (Table 1).

Table 1: Archaeological correlates of three motivations driving bird capture.

	Subsistence	**Social**	**Ritual**
Species	Selection based on caloric value and ease of capture. High species diversity with a focus on productive species OR low species diversity focusing on most efficient species for capture. Local and year-round species or migratory in large numbers.	Selection based on color or perceived qualities of species.	Selection based on color of feathers, perceived qualities of species, or symbolic associations. Harder to capture species present (solitary, arboreal, nonlocal).
Body part	Disarticulated elements. Whole skeleton represented OR bias towards one portion that indicates processing for food (ie: breast meat removal)	Abundance of elements carrying desirable feathers (ie: wing, cranial) OR distinct lack of these indicating processing and removal to another location.	Whole birds. Articulated parts of a bird (ie. foot, wing). Abundance of wing or feather-carrying elements.
Modification	Butchery and burning.	Cut marks on feather-carrying elements. No burning.	Little modification. No butchery. No burning. Possible calcination.
Context	Trash and secondary contexts. Deposition unplanned, informal.	Trash and secondary contexts. Deposition unplanned, informal.	Primary contexts. Special treatment (ie: burial, accompanying objects, pigment). Deposition planned.

I. Subsistence pursuits

The first, and perhaps most common motivation that directs human interaction with birds is a concern for subsistence. In economic pursuits, the primary factors which influence bird capture are both nutritional and ecological in nature. A species is more desirable from a dietary-goal-oriented perspective if it has a large body size and/or high caloric value relative to the energy expended in its capture (Tivoli 2010:133). Energy expended is directly related to factors such as sociality of the species; the more gregarious the species, the larger its flock, and the easier it is to capture en masse. Whether or not a bird is arboreal or ground dwelling affects how easy it is to capture. Seasonality is also a consideration, especially in the case of migratory birds who arrive in large numbers and can be advantageously exploited at a given time of year, or for species which are local year-round inhabitants. The most valuable birds in this situation would be those with a high caloric value who flock in large numbers and are either available year round or migrate in large groups. These are the birds that dominate the assemblages discussed below.

The correlates of a subsistence strategy were drawn from three archaeological cases where it is abundantly clear that the avian assemblage or a subset thereof is a product of bird exploitation motivated solely by dietary concerns. The first is the site of Quebrada Tacahuay, a processing site on the south coast of Peru, which contains some of the oldest evidence for the intensive exploitation of avian fauna. Of the identified vertebrate and invertebrate NISP, birds constitute 47% (deFrance et al 2001; Keefer et al 1998). This number increases drastically when considering fragments only identified to Aves (Keefer et al 1998 report 3,484 Aves bones out of 3,775 total specimens, 92%). Excavations yielded 1,213 NISP from approximately 9 different species of bird, despite the abundance of species locally available. An overwhelming 98.7% of these remains were of cormorant, booby, and pelican (deFrance et al 2001:420; Keefer et al

1998:1833-34). These are large-bodied, gregarious birds that nest colonially and would have been optimal to exploit for a high dietary return on energy invested. Butchery marks are abundant and appear almost exclusively on forelimb and axial elements, indicating the removal of breast meat (deFrance et al 2001:421).

At the Watmough Bay site in the Pacific Northwest, 7,504 NISP from 47 different species were identified. Despite this great species diversity, 87.8% of NISP are of aquatic species. More importantly, 57% of all avian fauna are of duck, and 32.3% of cormorant (Bovy 2012). As previously noted, cormorants are medium- to large-bodied, gregarious, colonially nesting water birds providing high caloric value and relative ease of capture. Ducks, though smaller, have a high fat content and are also known for their social behavior. Both species would have been easy to capture in relatively large quantities. Intriguingly, an overabundance of wing elements were recovered at the site. Aquatic birds were captured en masse, and their skins were flayed, leaving the distal wings attached. The rest of the bird was possibly cooked on the shore, and the skins may have been returned to the site for use in the manufacture of blankets (Bovy 2012:2057).

Lastly, a purely dietary motive is evident at the Archaic period shell mounds of the Soconusco region. At the site of Tlacuachero, while the bird assemblage is relatively small (n=59), it appears to be selective. Six distinct species are present, 5 are represented by only 1 individual specimen. The exception to this is *Phalacrocorax* sp. (cormorant), represented by 18 NISP (Wake 2014). Of the high diversity of birds available in this region, *Phalacrocorax* was clearly targeted presumably because of its medium to large body size and gregariousness, providing a high caloric return on energy expended.

In assemblages resultant from subsistence pursuits, two patterns of species diversity are common: great species diversity but with an overwhelming focus on a number of productive species (*i.e.* Watmough Bay), or low diversity as a result of intentional selection of a few very desirable species which when available are exploited intensively (*i.e.* Quebrada Tacahuay and Tlacuachero).

Aside from species diversity, another potential indicator of an economic motivation for bird capture is the distribution of elements at a site. If the species being captured are not too large to carry, most elements of the body should be present. If those species being hunted are too large to carry the distance between the site and the species' natural habitat, especially in large numbers, then a prominent abundance of certain portions of the body may be expected. Abundance of one portion of the body over others and especially *absence* of certain elements altogether indicate that birds were being processed elsewhere, usually at the site of capture, as was the case with ducks at the Watmough Bay site. Because birds were intended for consumption, the physical effects of cooking may be present on the remains. As the assemblage from Quebrada Tacahuay suggests, if the species being exploited are too large to easily be dismembered by hand, there will also be indications of butchery. If birds were disarticulated for cooking instead of cooked whole, then there should be burn patterns suggestive of this. Lastly, these remains should be found nearly exclusively in trash deposits; their deposition is unplanned and should reflect nothing other than refuse disposal.

II. Social Use

What I refer to as social exploitation is the capture of birds for their feathers or bone with the intent to use those feathers or products manufactured from bone in personal adornment and social display. Like other valued material goods, feathers may be used to create or reaffirm status through display, especially when certain individuals have primary access over others. This type of feather use should be considered distinct from the role of feathers in ritual (ie: on prayer sticks used as offerings, see Crawford et al 2005:159) and also from the use of feathers for utilitarian feathered objects that weren't involved in display.

Birds may also be desired in a social strategy for the manufacture of ornaments from their bones. Because bird bone is thin-walled and many elements are hollow, they are ideal candidates for the manufacture of cylindrical objects, particularly tube beads. Unfortunately, the manufacturing process usually erases all attributes that would enable species identification. When species information is not available, other qualities of the bird (habitat, color, behavior, etc.) are also lost. These qualities may have been important when selecting birds whose bones would ultimately be transformed into other objects. Bird bone beads and tools thus have less explanatory potential than do the remains of other subsistence, social, or ritual practices.

Though the practice of feather use in social display has been extensively documented ethnographically in the Pacific Islands, little archaeological work has been done to identify this behavior prehistorically. Feathered capes, cloaks, and helmets were the symbols of ranked chiefs, symbolizing power and status (Kirch 1985:6285). So-called "big-men" controlled sections of society by controlling material wealth, including feathers (White 1985:57). Across the Pacific Islands, it appears that red has been the most significant color, a sacred color, which is associated with chiefly *mana* (status/prestige), and in Tahiti only the highest chiefs were allowed to wear the red-feathered girdle (McGovern-Wilson 2005:210). In some cases, exploitation of birds by Pacific Islanders was so intense that, combined with environmental degradation and habitat destruction, it caused the extinction of many species (Kirch and O'Day 2003:486-487;

McGovern-Wilson 2005:208; Steadman 1995). A number of these species likely had decorative plumage and were hunted exclusively for their feathers. These include small birds that would have yielded relatively little meat, such as colorful pigeons and parrots. (McGovern-Wilson 2005:207).

At the Washpool Midden site in New Zealand there is evidence of the processing of birds for their feathers and their subsequent removal to another location. Here there is an absence of parakeet crania because their skulls were removed in order to preserve the tuft of red feathers. The Tui bird (*Prosthemadera novaeseelandiae*) similarly had its mandible removed to preserve the white throat feathers (Leach 1979; McGovern-Wilson 2005:212). At the site of Kahikinui on Maui, the concentration of bird remains is five times greater in elite areas than in nonelite areas, and certain species were exclusively used by elites (Kirch and O'Day 2003:493). Though the correlates of a social strategy are difficult to distinguish from those of a ritual strategy, subtleties make this possible.

The selection of feathers for social display should produce a bias in species towards those which are either colorful or who possess valued qualities, such as hunting prowess or night vision. Body part distribution might focus on wing elements because removal of the wing results in a portable and preservable unit of feathers. This abundance may be present at the site overall or at specific processing locations. A distinct *lack* of wing bones may be indicative of the removal of wings from a processing location to a consumption area. Relatively little burning should be present on these remains since in a purely social strategy they are not intended for consumption, and butchery may be limited to wing and pectoral elements. Though the motivations that drive this type of procurement are distinct from those of a ritual concern, as Table 1 shows, their archaeological signatures can be very similar and are thus difficult to distinguish archaeologically. The difference between them lies in context. Where a ritual strategy produces remains mostly in primary contexts (and perhaps in secondary (trash) if feathers are being used for ritual paraphernalia), a social strategy should limit the deposition of avian remains exclusively to trash contexts.

III. Ritual Engagement

Birds are valuable components of or participants in ritual activity. For example, they may be sacrificed or deposited whole or in part as offerings or dedications. As components of ritual activity they are valuable to the visual display of social prestige and the affirmation and maintenance of authority.

One example of definite ritual use of birds is seen at the Templo Mayor of Tenochtitlan. At least 252 individuals were found as offerings placed in boxes or directly in fill in the temples of Huitzilopochtli and Tlaloc. The range of birds selected for these offerings is relatively narrow: falcons, golden eagle, turkey, pelican, toucan, *Ardea alba* (Great White Heron), quail, and passerines. The majority of these (73.8%) are quail, falcon (14.3%), and eagles (5.9%), leaving only 6.3% from the other 5 types of birds (López Luján 1994:307-424). In the assemblage from the Templo Mayor, color is not a decisive factor, and most of these species are local. Instead, what appears to be most important are quail and birds of prey, who are known from the codices to be particularly significant to the Aztec, especially as offerings (Sharpe 2014b:25-30). Quails were potentially sacrificed in great numbers because their spotted feathers resembled the night sky (Seler 1996:263; Sharpe 2014b:39), or as offerings of food to the gods.

The occupants of Pueblo Bonito in Chaco Canyon imported Scarlet Macaws, and to a lesser degree Military Macaws, from as far as southern Mexico. Remains here appear to have been deposited as a result of a ritual strategy focused both on the interment of the animal as well as the extraction of their feathers for ritual paraphernalia. Procurement of nonlocal species would have taken considerable effort on the part of the inhabitants of Pueblo Bonito, and these birds were clearly desired for their colorful feathers. Their remains are clustered inside the pueblo; excavations in two separate rooms revealed 6 intentionally buried macaws, two in their own adobe-lined subterranean pits (Judd 1954:263-264). Sixteen complete skeletons, droppings, nuts and seeds in association with one another indicate that these birds were being kept for plucking. Four of these had deformed breastbones as a result of living with a lack of sunlight and fresh air (Judd 1954:264). Feathers are known to have been a component of ritual paraphernalia like prayer sticks and prayer feathers, which are recorded ethnographically and in rare cases archaeologically (Judd 1954:262-267). The only other species which appear in primary contexts at Pueblo Bonito are Red-tailed Hawk (n=1), found articulated on the floor of a room, and Thick-billed Parrot (n=1, also a nonlocal species), buried in another room (Judd 1954:264). Only 14 species were recovered from Bonitian rubbish heaps, five of which are birds of prey and three parrots (Judd 1954:266). These could certainly have been exploited for their feathers and then disposed of in trash middens. It is important to note, however, that Pueblo great house middens differ considerably from other deposits of domestic refuse. These were an integral part of spatial arrangement, and in some cases were sacred space; the contents of their patterned deposition do not resemble domestic garbage (VanDyke 2003:187).

Archaeological avian assemblages that are the byproduct of primarily ritual concerns should be intentionally selective with regard to either the color of the species' feathers, the qualities which that species is thought to possess, or its symbolic associations. The primary motivation for capture is to obtain individuals who may be participants in ritual activity (as offerings and/or sacrificial victims) or whose feathers may be plucked for use in ritual costuming or expression (ie: prayer sticks, headdresses). In some cases, these individuals are even kept in captivity, either for a portion of the duration of their lives, or with the intent to breed. This was the case at Pueblo Bonito, where macaws were contained for plucking, at the aviary maintained at Tenochtitlan for Moctezuma (Sharpe 2014b:10), and at Casas Grandes in Chihuahua, Mexico where macaws were bred (Minnis et al 1993).

In a ritual strategy, factors that are important to a subsistence strategy such as ease of capture, size, and locality become irrelevant. Especially if a particular species is desirable for its brightly colored feathers or revered for its qualities, energy will still be directed towards harder-to-capture species (arboreal and solitary) which may even be nonlocal to the area. This is especially true in the Americas, where birds desired for their colors, such as parrots, and those like the hawk, osprey, or the eagle revered for their hunting prowess, are arboreal or perching and often solitary in behavior. Thus species which are any combination of colorful, powerful, solitary, arboreal, and/or nonlocal may bias an assemblage that is resultant from procurement for ritual purposes.

With regard to element distribution, whole, articulated carcasses should be present if birds were being sacrificed and interred as offerings. Also present may be other articulated but incomplete portions of the skeleton, such as an entire foot or wing intentionally removed and interred as offerings. Little modification such as burning or butchery should characterize such an assemblage. The most important element in identifying ritual use is context: birds will appear in primary, undisturbed contexts, and they may receive special treatment, be buried in containers, treated with pigment, or they may accompany individuals in burial. Overall, the deposition of a bird or parts of a bird represents a level of planning and intentionality that is absent in the deposition resulting from an economic or social strategy.

Ritual as Practice

Relevant to the discussion of the involvement of birds in ritual is the work of Catherine Bell (2009a,b) who has reframed the problematic analytical concept of ritual in terms of *practice*, as situational and strategic action that reproduces a society's worldview (Bell 2009a:81-82). Ritual as practice is *ritualization*, a process through which particular social actions differentiate themselves in relation to other actions (Bell 2009a:74). In this sense, ritual is not a totally separate way of acting, nor is it a distinct analytical category. It constitutes itself in contrast to other activities in strategic ways, resulting in a privileged position vis-à-vis other activity. It exists only insofar as the activity from which it distinguishes itself exists. Ritual action achieves this contrast and heightened status through a number of potential mechanisms; those outlined by Bell are *formalism, traditionalism, invariance, rule-governance, sacral symbolism,* and *performance* (Bell 2009b). The mechanism of *formalism* creates a contrast with informal and casual behavior through the use of formal speech and gestures which render the activity restrained and impersonal (Bell 2009b:139,144); this formalism can extend to architectural space and features as well. Ritual action may rely on *traditionalism* in order to authenticate itself by reference to some antecedent practice or idea. If there is no connection to tradition, a ritual may be considered anomalous, unsatisfactory, or irrelevant to its observers and participants (2009b:145). *Invariance,* or the act of repetition and control in an act "subordinates the individual…to a sense of the encompassing and the enduring" (2009b:153). *Rule-governance* prescribes the ways in which participants can and should act, and forces them to engage in controlled interaction (2009b:154). Ritual activity can create and express sacredness in the people, objects, and places involved; *sacrality* distinguishes these through a connection to some higher power or greater entity (2009b:157-159). Lastly, the element of *performance* distinguishes ritual acts through the creation of a frame of reference that marks an act as deliberate by invoking unique and complex sensory experiences for the participants (2009b:160-161). While ritual practice itself cannot be observed, the strategies employed by ritualization leave material traces in the archaeological record. In particular, the repetitive nature of ritual creates patterning that enables us to determine the locus of these activities (Marcus 2007:46; McAnany 2002:117-118).

The above strategies—ritual, economic, and social—are frequently interrelated; the occupants of a site may be practicing one or more. It may be the case that a bird is captured for its feathers and subsequently eaten, or that certain species are eaten, while others are reserved for their use in ritual and are taboo for consumption. While economic strategies could have existed on their own uninfluenced by ritual or social concerns, it is likely less common that ritual and social strategies were being practiced to the exclusion of an economic one. It is obvious that where correlates do overlap, the most important factor is that of context.

Each of these strategies can have political implications. Access to birds in general or types of birds as a food source can be restricted as a means of social control through sumptuary rules. Access to birds with desirable feathers can be restricted to ensure their use by certain individuals or a segment of the population only. And in the sense of Bell, there are a number of ways that ritual activity (here with regard to birds) can distinguish itself as privileged action that has political implications. The above strategies and their material correlates provide us with a methodological framework with which to assess the avian faunal assemblage from Paso de la

Amada in order to understand the types of practice that guided capture of birds and its sociopolitical implications.

Materials and Methods

The material analyzed here comes from excavations conducted between 1985 and 1995 by Michael Blake, John Clark, Richard Lesure, Warren Hill, and Dennis Gosser. All material was screened through 4 or 5mm mesh (Blake 2014; Clark 1994; Lesure 2014; Steadman et al 2003). Bird remains were recovered from Mounds 1, 5, 6, 12, 13, 14 and 21. The vast majority of species identifications were reported by Steadman, Tellkamp, and Wake (2003), who lumped together remains from both Paso de la Amada and the site of El Varal, an issue which was corrected in 2010 when the El Varal remains were reported independently (Wake and Steadman 2010:106-107). Because additional, unanalyzed specimens were located since analysis in 2003, this paper serves in part as an update to the treatment of avian fauna at Paso de la Amada, without the inclusion of the El Varal birds. The most recently identified specimens were assigned to species by the author. All specimens, previous and new, were re-examined for evidence of burning, cut marks, and traces of working (striations, polishing, etc.) In addition, a host of new qualitative variables were recorded. These are: size (measured as distance from beak to tip of tail), weight, primary habitat (aquatic, terrestrial, arboreal), behavior (social, solitary), locality (local or non-local), seasonality (year round or migratory), and feather color. The majority of these data were obtained from Howell and Webb (1995).

The decision of which counting measure to use in zooarchaeological analyses must be made in consideration of the faunal assemblage being addressed, and the method used must be defined explicitly. MNI (Minimum Number of Individuals), which attempts to calculate the number of individuals of a species present, is a complicated measure that is not always suited to every assemblage. An MNI which is culturally valid must consider how fauna were distributed around the site once they arrived. But there is little understanding of food sharing behaviors in prehistoric Mesoamerica. Food was likely only shared at the household level, but households or sharing groups can be spread across a site (Emery 2004:28). NISP (Number of Individual Specimens Present) simply calculates the number of specimens from a species that are present. NISP has its own drawbacks; it can be influenced by size of a species due to reasons of recovery and preservation, by differential identifiability of certain elements of the body, and even by the chemical composition of the bone (Emery 2004:26). Emery suggests that NISP is a more reliable measure than MNI for Mesoamerican assemblages where assemblage size is small, species diversity is high, and preservation is poor, since under these circumstances the chance of species repetition is less.

It is my opinion that the nature of the assemblage at Paso de la Amada prevents the successful or beneficial use of MNI as an analytical tool. Because my analyses are primarily concerned with exploitation in relative terms—one species relative to another, one type of context to another, one resource zone to another—I use NISP. I have reported MNI for comparison in Table 2; this was calculated by mound and time phase; that is, MNI was calculated for each group of remains within a given time phase within a given mound. Steadman, Tellkamp, and Wake (2003:576-578) provide MNI for the site overall. Because there are four cases of articulated remains in primary context, Table 2 differentiates between primary and secondary context, so that any calculations are not biased by the abundance of NISP in these cases.

Like all sites in Neotropical environments, avian remains from Paso de la Amada are susceptible to preservational and taphonomic effects. This can be seen in the proportion of the larger, denser elements to those that are smaller and less likely to preserve. The number of elements represented decreases as one moves from the densest, largest bones to the smallest and most fragile: 146 humeri, tibiotarsi, carpometacarpi, coracoids, tarsometarsi, ulnas, radii, and femurs, compared to 42 phalanges, ribs, vertebrae, furculae, and cranial elements. However, all elements of the avian skeleton are represented in the assemblage, indicating that, under the right conditions, they *can* preserve, but that there is likely to be a slight bias towards larger elements. All in all, taphonomic processes should not be considered to heavily bias this assemblage, no more than at other contemporaneous sites in the region, and thus this analysis should be comparable to others.

Table 2: Taxon identified at Paso de la Amada, showing NISP and MNI calculated from Primary and Secondary excavation contexts. MNI not calculated for unidentified specimens (Aves, Aves small, medium, and large).

Taxon	**Common name**	**Primary Context**		**Secondary Context**		**Feather Colors**
		NISP	**MNI**	**NISP**	**MNI**	
<u>**Water Birds**</u>						
Anatidae						
Aythya affinis	Lesser Scaup			1	1	bk, w, br, p
Cairina moschata	Muscovy Duck			2	2	bk, w, g
Dendrocygna autumnalis	Black-bellied Whistling Duck			4	3	bk, w, br, rf
Anas sp.				3	2	
Anatidae				1	1	
Ardeidae						
cf. Ardea herodias	Great Blue Heron			1	1	w, b
Butorides virescens	Green Heron	104	1[1]	4	1	b, gr, rf
Egretta alba	Great Egret			1	1	w
Tigrisoma mexicanum	Bare-throated Tiger Heron			1	1	p, bk, w

Ardeidae				3	2	
Pelecanidae						
Pelecanus occidentatis	Brown Pelican			2	2	br
Phalacrocoracidae						
Phalacrocorax brasilianus	Neotropic Cormorant			2	1	bk, br
Podicipedidae						
Podilymbus podiceps	Pied-billed Grebe			1	1	br
Tachybaptus dominicus	Least Grebe			1	1	br, w
Rallidae						
Gallinula chloropus	Common Moorhen			1	1	br, bk, w
Scolopacidae						
Calidris minutilla	Least Sandpiper			1	1	p, b
Sternidae						
Sterna sp.				1	1	
<u>Terrestrial Birds</u>						
Accipitridae						
Accipiter striatus	Sharp-shinned Hawk			4	1	p, br, w
Buteo magnirostris	Roadside Hawk			4	1	p, br, w
Harpia harpyja	Harpy Eagle[2]			1	1	bk, w, gr
Accipitridae				2	2	
Cardinalidae						
Saltator coerulescens	Greyish Saltator			1	1	gr, br
Cathartidae						
Cathartes aura	Turkey Vulture			2	1	bk, br, w
Coragyps atratus	Black Vulture			1	1	bk, br, w
Cerylidae						
Megaceryle torquata	Ringed Kingfisher			1	1	b, rf, w, p
Cracidae						
Ortalis leucogastra	White-bellied Chachalaca			5	1	br, w
cf. Ortalis leucogastra	White-bellied Chachalaca			3	2	br, w
Ortalis vetula	Plain Chachalaca			3	2	br
Ortalis sp.				2	1	
Columbidae						
Claravis pretiosa	Blue Ground Dove			2	1	gr, b
Geotrygon montana	Ruddy Quail-Dove			1	1	br, rf
Leptotila verreauxi	White-tipped Dove			1	1	br, gr
cf. Leptotila verreauxi	White-tipped Dove			1	1	br, gr
Scardafella inca	Inca Dove	26	1[3]	1	1	br, gr, r

Zenaida macroura	Mourning Dove			3	1	br, gr
cf. Zenaida macroura	Mourning Dove			1	1	br, gr
Columbidae				4	1	
Cuculidae						
Crotophaga sulcirostris	Groove-billed Ani			1	1	bk
Morococcyx erythropygus	Lesser Ground Cuckoo			1	1	br, rf
Emberizidae						
Aimophila rufescens	Rusty Sparrow			1	1	br
Falconidae						
Caracara plancus	Southern Crested Caracara	11	1[4]	3	1	p, bk, br, w
Icteridae						
Agelaius phoeniceus	Red-winged Blackbird			1	1	bk, r, y
Quiscalus mexicanus	Great-tailed Grackle			3	2	bk, b
Momotidae						
Momotus momota	Blue-crowned Motmot			2	1	b, g, rf
Momotidae				1	1	
Odontophoridae						
Colinus virginianus	Northern Bobwhite			17	2	p, br, rf, w
Cyrtonyx ocellatus	Ocellated Quail			2	2	p, br, rf, w
cf. Cyrtonyx ocellatus	Ocellated Quail			1	1	p, br, rf, w
Odontophorus guttatus	Spotted Wood Quail			1	1	p, br, rf, w
Pandionidae						
Pandion haliaetus	Osprey			11	2	p, bk, br, w
Psittacidae						
Amazona albifrons	White-fronted Amazon			1	1	g, b, r
Amazona oratrix/ auropalliata	Yellow-headed Amazon/ Yellow-naped Amazon[5]	32	1[6]			g, y, r
Ara militaris	Military Macaw[2]			1	1	g, b, rf, y
Aratinga canicularis	Orange-fronted Parakeet			1	1	g, b, y
Ramphastidae						
Aulacorhynchus prasinu	Emerald Toucanet			2	1	g, b, y, rf
Tityridae						
Pachyramphus aglaiae	Rose-throated Becard			2	2	r, rf
Tyrannidae						
Myiodynastes luteiventris	Sulphur-bellied Flycatcher			2	1	br, w, rf
cf. Myiodynastes luteiventris	Sulphur-bellied Flycatcher			1	1	br, w, rf
Tyrannus sp.				1	1	

Tytonidae						
Tyto alba	Barn Owl			2	2	p, br, w, rf
Unknown family						
Aves				60	x	
Aves, small				32	x	
Aves, medium				34	x	
Aves, large				6	x	
Passeriformes				1	1	
Totals						
Waterbirds		104	1	30	23	
Landbirds		69	3	102	52	
Unidentified		0	0	132	x	
All		173	4	264	75	
Grand Totals			**NISP**	**MNI**		
Waterbirds			134	24		
Landbirds			171	55		
Unidentified			132	x		
All			**437**	**79**		

[1] Resting on the floor of the southwest step of Structure 4, Mound 6.

[2] Currently non-local, though may have been local previously.

[3] On floor of the southeast interior portion of Structure 4, Mound 6.

[4] On floor of northeast porch of Structure 4, Mound 6.

[5] Specimens from this individual could not be distinguished between *Amazona oratrix* or *Amazona auropalliata*. *Amazona auropalliata* is local but *oratrix* is presently nonlocal. *A.oratrix*'s modern distribution is close enough that it could have been local prehistorically.

[6] Beneath Floor 1 at Mound 13.

Feather color codes: p=patterned, bk=black, br=brown, w=white, gr=gray, rf=rufous, b=blue, g=green, r=red, y=yellow.

Results of Analysis

The assemblage from Paso de la Amada is composed of 437 individual specimens from 46 different species, with an MNI of 79 (Table 2). While these values seem low compared to overall faunal assemblages in the region and elsewhere, they are actually comparable to—even slightly higher than—average (Table 3). The average NISP of an avian faunal assemblage in Formative period Mesoamerica is under 64, and the percent of the assemblage which is composed of birds (calculated as NISP avian remains over NISP total vertebrate remains) is

1.31%. The assemblage from Paso de la Amada is significantly larger in terms of NISP and the portion of its vertebrate assemblage comprised of birds is 1.52%.

Table 3: Formative period zooarchaeological assemblages in Mesoamerica.

Site	NISP birds	NISP total vertebrates	% bird makeup	Source
Soconusco				
Paso de la Amada	437	28831	1.52%	
El Varal	28	1873	1.49%	Wake and Steadman (2009)
W. Guatemala				
La Blanca	104	770	13.51%	Wake and Harrington (2002)
Maya region				
Bayak	2	180	1.11%	Emery (2013)
Cahal Pech	38	3149	1.21%	Stanchly (1995); Emery (2013)
Cancun	1	2500	0.04%	Wing (1974)
Caracol	139	1447	9.61%	Teeter (2001)
Colha	44	11224	0.39%	Shaw (1991)
Cuello	55	20926	0.26%	Wing and Scudder (1991); Carr and Fradkin (2009)
Dzibilchaltun	1	77	1.30%	Wing and Steadman (1980); Emery (2013)
El Mirador	45	1804	2.49%	Emery and Thornton (2015)
Kaminaljuyu	5	2518	0.20%	Emery (2013)
Punta de Chimino	0	1724	0.00%	Emery (1997)
Ceibal	64	4138	1.55%	Sharpe (2014a); Pohl (1985)
Tikal	51	597	8.54%	Moholy-Nagy (1994, 2003); Pohl (1976, 1990)
Holmul	5	148	3.38%	Sharpe (2014a)
San Bartolo	62	784	7.91%	Sharpe (2014a)
Total	1081	82690		
Average	63.59	4864.12	1.31%	

All species identified are either local or have a modern distribution that suggests that they could have been locally obtainable when the site was inhabited. The majority of species are year-round residents, with only 8 migratory to the coast. Over the course of occupation at Paso de la Amada, the quantity of birds being exploited increases with each phase. As bird exploitation increases, so does species diversity. This increase corresponds with an increase in all other classes of fauna—mammals, amphibians, reptiles, and fish—and is reflective of an increasing population and differential preservation rather than an increase in intensity of bird exploitation.

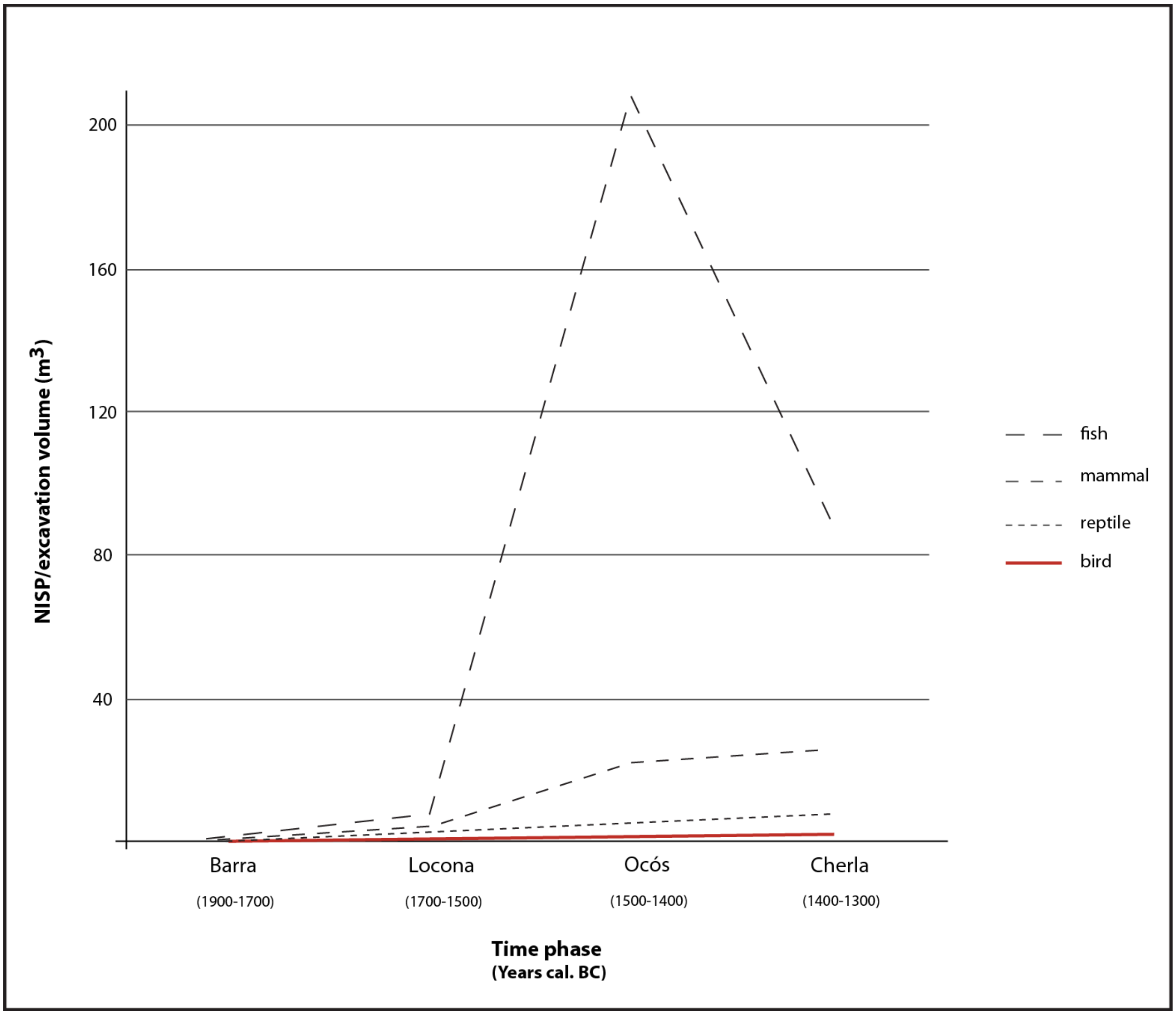


Figure 3: Increase in exploitation of different classes of animals throughout the occupation of Paso de la Amada. Calculated as NISP standardized by excavation volume. The dramatic increase in fish remains is due to an especially dense Ocós phase oven.

The productive, species-rich environment of Coastal Chiapas is home to an abundance of birds; Howell and Webb (1995) describe at least 487 species native to the area, and there could be many more whose range was once local. Plenty of large-bodied, relatively easy to capture species are available, as well as birds with beautiful, brightly-colored plumage. Yet the inhabitants of Paso de la Amada utilized only 46 species, less than 10% of those potentially available to them. Below I examine evidence for each type of logic—subsistence, social, or ritual—which could have driven the capture of these species, in terms of the criteria and correlates outlined in Table 1.

Subsistence Pursuits

Compared to the strategies at sites like Quebrada Tacahuay, Watmough Bay, and Tlacuachero, there does not seem to be an intense dietary interest in birds at Paso de la Amada. Certainly, birds are being eaten, but their contribution to the diet is minimal, at only 1.52% of the vertebrate assemblage. These remains are characterized by high species diversity, suggesting that exploitation was not intensively targeted towards productive species.

That dietary concerns drove bird exploitation to some degree at Paso de la Amada is indicated by the relationship between intensity of capture (measured in NISP) and the distance of different ecological zones (habitats) from the site. Paso de la Amada is surrounded by four general ecological zones: the coastal plain (adjacent to the site), the savanna (~3-4 km distant), the littoral (~7km), and the Cantileña swamp (~10km) (Figure 4) (Clark 1994:58-80; Feddema 1993:8-14). Most of the species present at Paso de la Amada come from the adjacent coastal plain. As one moves outward from the site, intensity of exploitation from each zone (measured as relative NISP) decreases with distance. From the immediately adjacent coastal plain, there are 42 NISP and 23 species. High species diversity relative to NISP indicates that procurement from this zone was ad hoc. Each species is represented by only 1 to 4 NISP, and no particular species or type of bird is consistently exploited. Capture focused on whatever was available at a given moment when a bird was needed to supplement a meal.

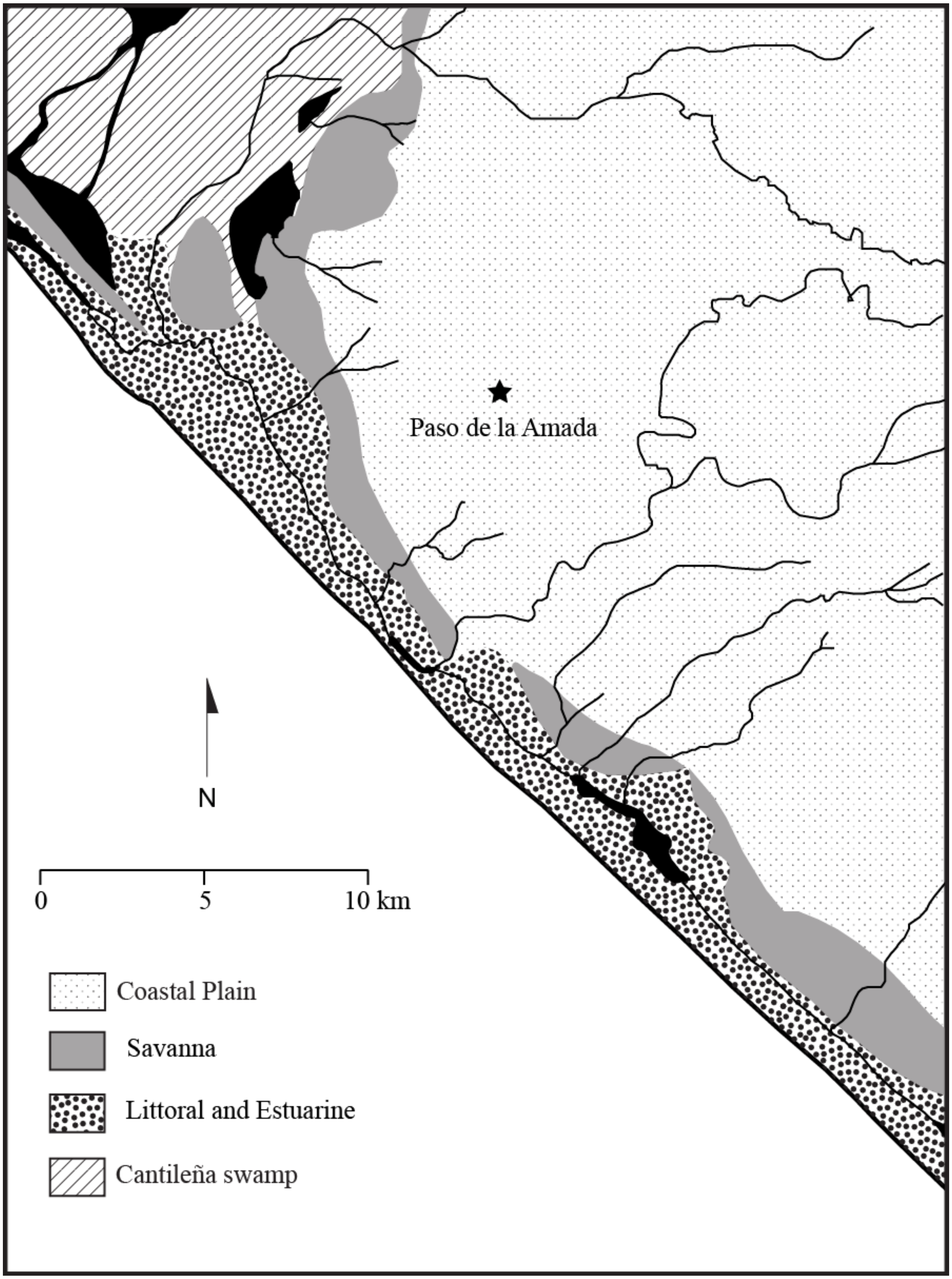


Figure 4: Four different ecological zones discussed in the text. Adapted from Feddema 1993:Figure 1.2 and Clark 1994:Figure 9.

For the savanna a more intentional pattern is evident, with 36 NISP from only 7 species. Capture is significantly biased towards members of the *Colinus* and *Ortalis* families (quail and chachalaca), at 81% of the Savanna NISP. These are generally gregarious birds who forage in groups and spend much of their time on the ground, making them easy to capture in numbers.

Because subsistence pursuits seem to have been influenced by distance from the site, (and because trips to one could have easily incorporated trips to the other) I have lumped species from an estuarine environment together with those from the littoral zone; these are approximately 7km away. Capture in the littoral is more targeted than in the coastal plain, but less so than in the savanna. Twenty-four (24) NISP from only 9 species are of cormorant, pelican, Osprey, heron, kingfisher, and sandpiper. Nine (9) NISP are heron, while the others are each represented by low NISPs (1-2). The one exception is 11 NISP from *Pandion haliaetus*, but these specimens were found in the same levels of adjacent units and are likely to have originated from the same individual. There also appears to be a focus on migratory species: 6 out of 8, making up 73% of the NISP, from this zone are winter residents on the coast. These are also mostly large-bodied, gregarious species. The inhabitants of Paso de la Amada may have understood that during winter trips to the coast, they could capture large, migratory birds in numbers; yet they still exploited these species only marginally.

Lastly, procurement from the Cantileña swamp is limited. Only 12 NISP from 7 species were recovered. Most species are represented by only one individual specimen. It appears that ducks were a minor priority, with *Cairina moschata, Dendrocygna autumnalis,* and *Aythya affinis* making up 7 of the 12 NISP. This environmental zone is the farthest from which birds were extracted (~10km). It is likely that these individuals were captured on the occasion of trips to the area for other resources, such as freshwater fish.

The decreasing intensity of exploitation relative to distance from the site suggests an expedient strategy that focused on what was closest and most available. Additionally, strategies differ within each zone. Exploitation in the immediately adjacent area is ad hoc, while that in the savanna, littoral, and swamp is relatively focused on particular types of birds, this focus becoming less intensive with distance from the site.

Table 4: Species identified at Paso de la Amada from different ecological zones.

Coastal Plain (37% NISP)	**Savanna (32% NISP)**
Accipiter striatus	*Amazona oratrix/auropalliata*
Aimophila rufescens	*Buteo magnirostris*
Amazona albifrons	*Cathartes aura*
Ara militaris	*Colinus virginianus*
Aratinga canicularis	*Coragyps atratus*
Aulacorhynchus prasinus	*Ortalis leucogastra*
Claravis pretiosa	*Ortalis* sp.
Crotophaga sulcirostris	*Ortalis vetula*
Cyrtonyx ocellatus	**Littoral (salt and brackish water) (21% NISP)**
Geotrygon montana	
Harpia harpyja	*Ardea herodias*
Leptotila verreauxi	*Aythya affinis*
Momotus momota	*Butorides virescens*
Morococcyx erythropygus	*Calidris minutilla*
Myiodynastes luteiventris	*Megaceryle torquata*
Odontophorus guttatus	*Egretta alba*
Pachyramphus aglaiae	*Pandion haliaetus*
Caracara plancus	*Pelecanus occidentatis*
Quiscalus mexicanus	*Phalacrocorax brasilianus*
Saltator coerulescens	**Cantilena Swamp (freshwater) (10% NISP)**
Scardafella inca	
Tyto alba	*Agelaius phoeniceus*
Zenaida macroura	*Cairina moschata*
	Dendrocygna autumnalis
	Gallinula chloropus
	Podilymbus podiceps
	Tachybaptus dominicus
	Tigrisoma mexicanum

Size is an important consideration in determining which species may or may not have been eaten. The vast majority (95%) of the NISP of specimens identified to species are medium- or –large-bodied, greater than 21 cm from tip of beak to tip of tail. Species less than 21cm, which comprise 5% of the NISP were unlikely to have been eaten. At this size, small birds may not have been considered worth the effort of capturing, cooking, and pulling apart, especially when reliable plant foods and other sources of animal protein were available. These small species may have been collected instead for their feathers.

The distribution of elements among species suggests that birds were captured and brought back to the site whole. There is no bias towards any part of the body of any species present. Most if not all of the species are of carrying size; the largest bird weighs a maximum of 10 kg (the female Harpy Eagle), and most weigh far less than 5 kg. Because most birds were captured only occasionally and in low numbers, there would have been minimal need to create a system of butchery at the capture site. The general lack of burning and butchery evidence supports the argument that birds were brought back to Paso de le Amada whole and suggests that they were cooked whole. Approximately 19% of the bird bones from Paso de la Amada are burnt; only 4.5% are cut. Burning is not, as might be expected, concentrated in species that were being relatively targeted for food (such as quail and chachalaca), nor is butchery correspondent with larger birds. Traces of burning and cut marks are found throughout the body and not focused on any particular elements. It is important to note that a lack of evidence of burning and butchery does not indicate that birds were not being consumed. A bird carcass can easily be disarticulated without tools, simply by pulling it apart; this becomes even easier if a bird has been cooked whole and thus made more tender (Serjeantson 2009:144). Additionally, cooking methods like boiling, stewing, or roasting in an enclosed oven leaves no trace (Serjeantson 2009:153).

The only distinct evidence of processing comes from the remains of a single *Accipiter striatus* individual. As meat comes in contact with a fire, it shrinks away from the bone, resulting in a portion of the bone being burnt (Serjeantson 2009:153). The right tibiotarsus of this individual is burnt in a unique pattern that can only indicate roasting of the leg with the meat on. The proximal humerus of the same individual features a series of cut marks that indicate scraping, almost certainly in an effort to remove skin (including feathers) from the humerus downwards. Because birds possess a desirable layer of fat directly beneath the skin, they are rarely skinned before cooking. Instead, evidence of skinning is usually a byproduct of the removal of skin to preserve feathers for decoration (Serjeantson 2009:138). This single individual supports the idea that any bird may be utilized for its feathers *and* eaten, that particular species do not have to be relegated to one purpose or the other.

Differential access to type, quality, and quantity of food are often considered to be standard zooarchaeological correlates for variation in status. In the case of the Maya, deFrance reports a higher proportion of birds, especially wild, in elite contexts as an indicator of status (deFrance 2009:125). At Paso de le Amada, however, there is no indication of any difference in access to quantity, type, or even size of birds between platform and nonplatform contexts during the Locona and Ocós phases (Cherla phase material was excluded from these calculations because almost all excavated Cherla phase material came from platform contexts and thus overwhelms the sample). NISPs between platform and nonplatform contexts, when standardized by excavation volume, are nearly identical, and there is no difference in diversity of species being collected. In other words, platform and nonplatform residents had equal access to birds *overall.* Nearly all species present in Locona and Ocós platform contexts are also present in nonplatform contexts. This suggests that access to type and quantity of particular species or types of birds was not controlled through sumptuary rules.

At only 1.52% of the overall vertebrate assemblage, birds were not a major part of the diet of the inhabitants of Paso de la Amada. Instead, they were captured in an ad-hoc fashion, as occasional contributions to subsistence. Rather than being a targeted source of food, they were collected opportunistically when trips were made to different ecological zones for other resources; they may have rarely been the focus of a hunting trip. Immediately around the site, whatever was available and easiest to capture was consumed. The contribution of birds from the savanna, the littoral, and the swamp decreases with respect to distance. Most procurement mirrors that of the adjacent coastal plain, unsystematic and unplanned. While no type of bird was intensively exploited, within the savanna quail and chachalaca were the focus of attention, perhaps because they are relatively easy to capture on the ground. The same applies to the littoral, where the large-bodied, gregarious, migratory shorebirds received the most attention. Ducks were of priority among those birds from the swamp, but samples are too small to indicate any certain pattern.

Social Use

If individuals sought feathers for personal adornment and decoration in the process of self-promotion and aggrandizement, then we might expect there to be a bias towards colorful birds or certain birds valued for particular qualities. As an example of the latter, raptors such as hawks and eagles have been particularly revered for their power, sharp vision, and hunting prowess. Serjeantson (2009:186) calls this “selection by association,” where feathers of particular species are selected because it is believed that in wearing the feathers of this bird, its qualities are bestowed upon the wearer.

Birds with desirable feathers do not make up an overwhelming portion of the assemblage at Paso de la Amada. The colorful species at the site could have provided blue, green, red, yellow, and orange feathers. Of these colors, species with blue and green (or blue/green) feathers predominate. Other colors are represented by species with much lower NISPs, and are usually present on feathers as tertiary colors (*i.e.* as hints of color rather than as whole feathers). However, there is no evidence that the inhabitants of Paso de la Amada were targeting blue/green birds significantly more than any other birds. Of the 487 species available in the region, 19.7% (n=96) can provide blue, green, or turquoise feathers (Howell and Webb 1995). At Paso de la Amada, 23.9% of species captured would have provided blue/green feathers. While this is an elevated percentage, a Fisher's exact test reveals that there is no statistically significant difference (p=0.58, 2-tailed test) between the proportion of blue/green species at Paso de la Amada to those available in the local environment. Similarly, 7.6% of species available in the region are hawks, kites, or eagles who might have been admired for their qualities (Howell and Webb 1995), compared to 15.2% of species at Paso de la Amada. Again, this difference is not statistically significant (p=0.17, 2-tailed Fisher's exact test). It is important to note that the number of species local to the area may not accurately represent the true *availability* of certain species and types of birds. We cannot account for factors such as local population size in the Formative period, nor does the comparison take into account factors which make a bird more easily procurable, such as social behavior, nesting location, and seasonal availability.

As described above, an abundance of wing elements can serve as indirect evidence of the use of feathers. Among the disarticulated remains at Paso de la Amada, there is no bias towards wing elements. While this does not rule out the use of feathers, it indicates that inhabitants did not engage in a system of disarticulating remains in order to preserve those feathers for later use. There is no reason to assume that they could not have simply plucked the bird and disposed of it, or even released it. Many of the colorful species at the site, such as the *Amazona* and *Aratinga* species, *Momotus momota, Ara militaris*, and *Aulacorhynchus prasinus* have tail feathers of equally desirable color and length as those on the wings, the taking of which would not have resulted in any archaeological signature. If blue/green birds or birds of prey were collected for their feathers, there may be an absence of burning, and a relegation of any cut marks to wing elements such as the humerus or carpometacarpus, where disarticulation would have occurred if wings were being preserved. In both blue/green birds and birds of prey, there is no statistically significant difference in the proportion of modification and cutting on these remains compared to the rest of the assemblage, and cutting is not limited to wing elements. Neither of these types of birds were exempted significantly from burning compared to the overall assemblage. This, again, does not rule out the practice of plucking before eating, but simply shows that these birds were rarely dedicated solely to feather removal. Additionally, unlike at Pueblo Bonito or Casas Grandes, for example, there is no evidence to suggest that birds were kept in captivity to be plucked or bred.

In addition to the scrape marks on the *A.striatus* humerus, there is one other definitive example of an interest in feathers. The tibiotarsus of one Military Macaw was recovered from a nonplatform trash context. A series of parallel cuts were identified on this bone whose placement and nature can best be explained as an attempt to skin the bird. Of all blue/green birds at the site, *Ara militaris* has the longest and perhaps the most vibrant feathers and appears to have been the subject of skinning, an act that, as mentioned above, would not be the result of processing for cooking, but instead an effort to preserve the entire skin with feathers on.

There is no indication that platform residents had greater access to birds of prey or blue/green birds than nonplatform residents. Remains from two elite contexts, Mound 6 and a Mound 1 Cherla phase high-status midden redeposited as fill (both elite), were compared to all nonplatform (non-elite) contexts from all phases; these values were standardized by excavation volume. Instead of an abundance of blue/green birds or birds of prey in the two elite contexts, there are instead twice as many of these birds in nonplatform contexts.

Species and element distribution provide little concrete evidence that the inhabitants of Paso de la Amada were capturing birds solely or in significant quantities for their feathers. However, there are two definitive examples of the practice of skinning for the preservation of feathers on the bones of an *Ara militaris* and an *Accipiter striatus*. Given the elusive nature of evidence for feather use in general, these seem like potential signifiers of a desire for feathers. The simple fact that colorful birds and birds of prey are present at the site, most of which are solitary and arboreal, making them relatively more difficult to capture, leaves open the possibility that their feathers could have been used for display. The ethnographically and ethnohistorically documented importance of this practice in Mesoamerica makes this possibility all the more likely. If the inhabitants of Paso de la Amada were exploiting birds for their feathers, it is not true that aggrandizers and platform residents had better access than anyone else at the site. Nor is there evidence to suggest that a certain type of bird's feathers were significantly valued over any other type of bird.

Given the nature of the evidence for feather use at Paso de la Amada, I would suggest that feather exploitation was of interest to the inhabitants, but feather *use* was egalitarian. Certain color feathers or those of certain birds are not exclusively (or even more frequently) used by a subset of the population. If feathers were used for costuming, it was likely individualized, with minimal rules concerning who could wear what. There seems to be no intense interest in *any* type of bird, colorful, blue/green specifically, or birds of prey; these were being exploited in proportions similar to what may have been locally available.

Other Social Uses for Bird Material

The only class of artifact that appears to have been manufactured from bird bone is tube beads. Beads in general are another class of display item susceptible to manipulation in prestige building. It is unclear whether bird bone was chosen over other animal bone for the manufacture of tube beads simply because of its nature—long, hollow, thin walled—or if species or type of bird providing the material was also an important factor. Of course, the act of manufacturing a tube bead from bone very quickly eliminates the possibility of identifying the species from which the material came. A total of 35 bird bone tube beads were found at Mounds 1, 12, and 32. These data resulted only from the excavations performed by Lesure and are thus incomplete, lacking in particular data from Mound 6. What is evident in this limited data set is that bird bone tube beads are found in both platform and nonplatform contexts, and that they were manufactured at least from the Locona through Cherla phases. The existing assemblage indicates that this type of artifact was available to all residents.

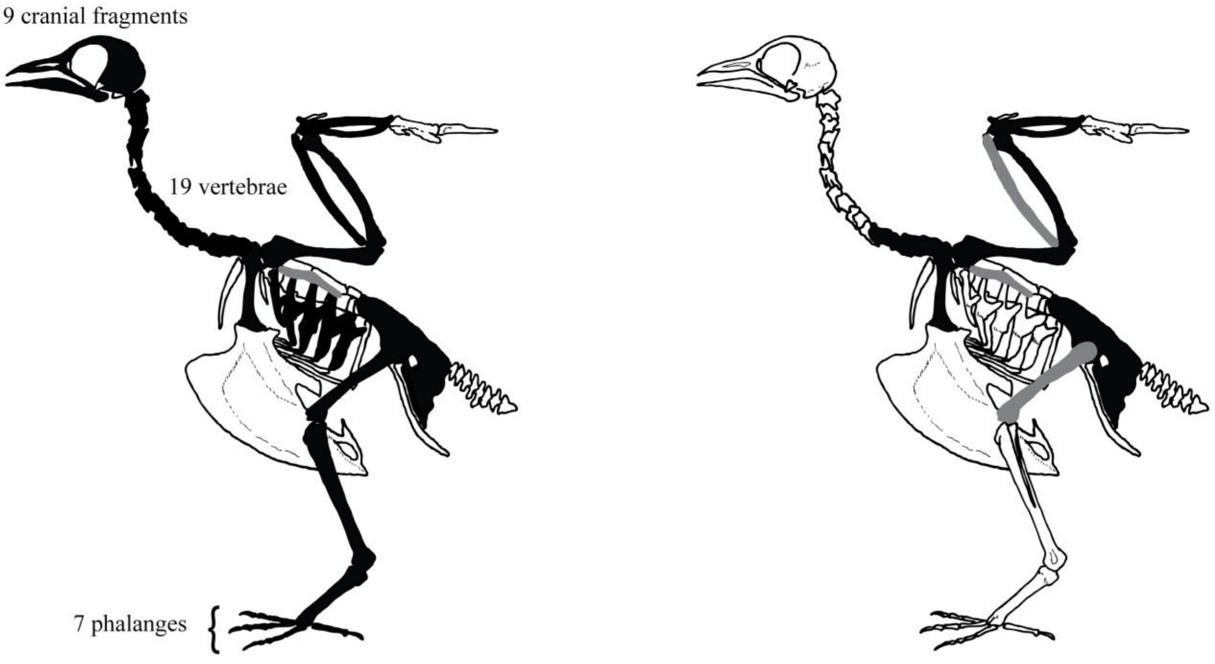
One artifact of manufacturing debris from bird bone working was recovered from the Ocós occupation of Mound 6. A fragment from the shaft of a left ulna of a Harpy Eagle was scored and snapped on both ends. This bone also had a series of vertical striations indicative of the removal of the periosteum. That the perisoteum needed to be scraped off suggests the intentional selection of this Harpy Eagle for the manufacture of whatever cylindrical object was produced. Its ulna was put to the manufacturing process relatively soon after its capture, rather than having been picked up from trash and subsequently worked. Whatever object was manufactured from the original ulna, the Harpy Eagle was intentionally selected to be the donor of the bone, perhaps for whatever symbolic associations it held.

Ritual Engagement

The most reliable way to distinguish avian remains that were the product of ritual activity is through context. Four birds at Paso de la Amada were chosen to be deposited articulated whole or in part and were recovered in primary contexts, deposited in/beneath or on a floor; none show any evidence of butchery or burning, These I interpret as offerings. The elements present for each of these articulated sets of remains are displayed in Figure 5.

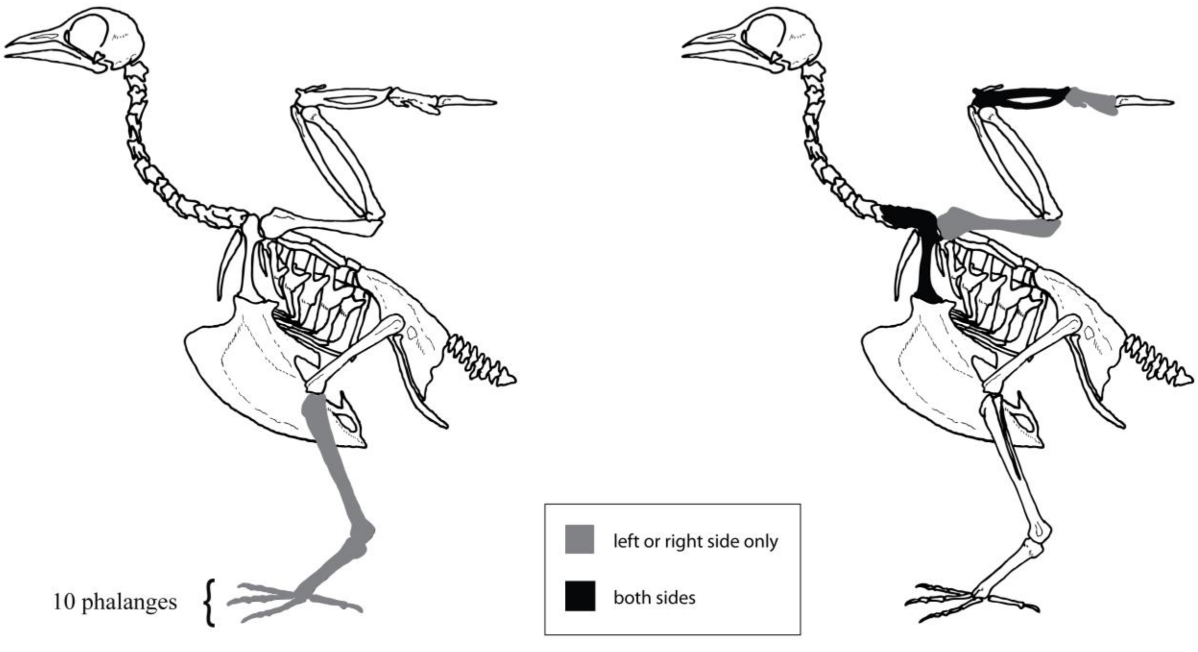
Three of these individuals were recovered from Structure 4 in Mound 6, which dates to the Locona phase (Blake 2011:105; Blake et al 2006:197:Table 7.1). Structure 4 was a residence positioned on top of a one-meter-tall platform, and consisted of a well-prepared clay floor, two hearths, and approximately 20 postholes. The rectangular floor was flanked by a low clay wall running its perimeter, which formed a semicircle at either end of the building (Figure 6). On each side of the structure was a porch and a long step (Blake 2011:103-105). Each bird was placed in a different part of the structure (Figure 6), either on or in the floor (Blake 2011:105), indicating that these were dedicatory offerings deposited as Structure 4 was being closed and the platform of Structure 3 was being prepared. On the southwest porch nearly all elements of a Green Heron (*Butorides virescens)* were present, indicating that the bird was initially deposited whole, with skin on. An Inca Dove (*Scardafella inca*) was left in the same manner in the southern semicircle of the interior of the structure. Lastly, the left foot of a Southern Crested Caracara (*Caracara plancus*) was placed on the northeast porch (Clark 1994:Figure 95). Each of these birds was recovered from Level 9, material resting directly on top of the prepared clay floor of Structure 4. Two other probable offerings were recovered from Mound 6, a greenstone celt and a carved deer scapula covered in red pigment (Blake 1991:40). The scapula was found beneath Floor 2, and the greenstone celt beneath Floor 5 or 6, both in the center of the building and both dating to the Locona phase (Blake 1991:39-42, 2011:107).

The only other apparent bird offering at Paso de la Amada comes from Mound 13 and consists of elements from the left and right wings of either *Amazona oratrix* or *Amazona auropalliata*. Both of these species are primarily bright green with hints of yellow, red, and blue. The elements present, an absence of cut marks, and the presence of one vertebra suggest that the wings were pulled off of the back, rather than removed with tools. These were then deposited directly prior to the preparation of a clay floor, Floor 1 in Mound 13, which capped mixed Locona and Ocós material. There is some indication that this floor overlies a one-meter-tall Locona phase platform (Lesure 2014). If this were the case, then it would seem that the two *Amazona* sp. wings were involved in some sort of dedication related to this platform.



Butorides virescens

Scardafella inca



Polyborus plancus

Amazona sp.

Figure 5: Elements present in the four cases of articulated individuals.

Layout of the Offerings

Ethnographic and ethnohistoric research, oral traditions, and archaeological evidence have made obvious the significance of a quadrapartite directional system and the layered cosmos in Mesoamerican cosmology. These aspects were routinely and ritually expressed in the built environment, through the intentional deposition of artifacts, building layout, site layout, and perhaps even on a regional scale (Mathews and Garber 2004). Perhaps most often, the division of the world into four quarters and an axis mundi is expressed through symbolic associations, such as color, built into space. Most Mesoamerican cultural groups are thought to have aligned the world to a cardinal (N, S, E, W) quadripartite system rather than an intercardinal one (NE, SE, SW, NW). Because there are only three birds offered at Structure 4 and these align, along with the building, to the intercardinal directions, it does not appear that the layout was intended to represent the horizontal division of the cosmos. Additionally, the colors of the individuals do not align consistently with known directional color associations of the Maya, the Aztec, or the Mixe.

It does appear very possible, however, that the deposition of birds in Structure 4 was intended to pattern the vertical division of the cosmos, that is, the upper, middle and lower realms. Structure 4, like all structures at Mound 6, is aligned to the intercardinal directions. Its southwest wall parallels the coast, and its northeast wall and front door face the Sierra Madre Mountains. Also to the northeast, the Tacaná volcano rises to an elevation of 4,064 meters (Clark 1994:44), reaching into the sky. On the front porch facing this volcano is the offering of the Caracara, a soaring species that also occupies the skies. The offering of the Green Heron was placed on the back step, facing the estuaries from which it came. In the interior of the building is the Inca Dove, a ground-dwelling species. Ashmore suggests that to the Maya, North may have symbolized the sky and the celestial realm, while the South represented the downward direction and the watery underworld (Ashmore 1991:201; Mathews and Garber 2004:50). With this in mind, it seems significant that a sky-soaring species was placed on the northern (NE) side of the building, facing the mountains and a volcano also reaching into the skies, and facing the direction associated with the celestial realm; that a watery species was placed on the southern (SW) side of the building, facing its watery habitat and the direction of the underworld; and that a ground-dwelling species, occupying this world, was placed in the interior of the structure, sandwiched between these two conceptual layers.

The act of offering the three birds at Structure 4 may have been a deliberate act of horizontally mapping the vertical layering of the cosmos onto physical space. After their deposition, a meter-tall platform was built as the foundation for Structure 3. Because quadripartite patterning and vertical layering are important components of Mesoamerican creation stories, the recreation of this order represents the “animation” or “activation” of sacred space and legitimizes the authority of its recreators (Mathews and Garber 2004:53, 56). Thus the act of recreating the cosmos beneath the platform of Structure 3 would have marked its inhabitants as incredibly powerful.

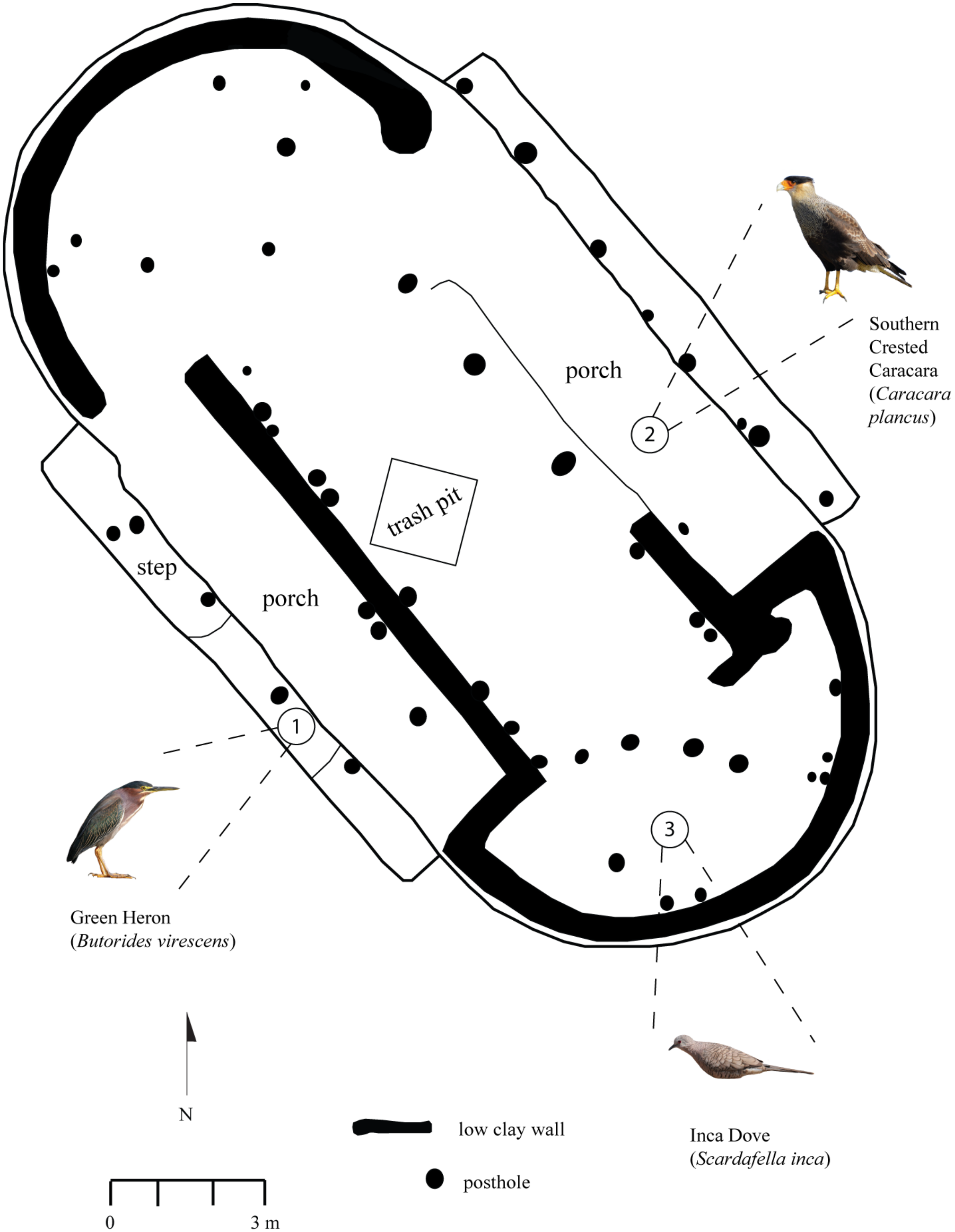


Figure 6: Figure 3: Structure 4, Mound 6, showing locations of bird offerings. Redrawn from Blake 2011:Figure 5.2, locations of birds from Clark 1994:Figure 95.

Ritualizaiton at Paso de la Amada

It is immediately obvious that these four sets of remains were treated differently than those of all other birds that were brought to the site. These are the only articulated remains at Paso de la Amada, and all appear in platform contexts. They were not butchered, nor were they subjected to burning; they were deposited whole or in part (foot or wings). Their deposition was intentional and planned, and not the result of some other activity. The primary motivation driving the deposition of these remains was deposition itself, rather than as a byproduct of the extraction of feathers or consumption of food.

One characteristic of a ceremonial center, such as Paso de la Amada, is that it is “deliberately configured for rituals involving substantial numbers of people” (Lesure 2011b:119). Ritual can be an effective means of creating and enforcing differences in social status. While the setting of ritual activity can mark that activity as meaningful and distinct from others, so too can ritual activity distinguish space. Specifically in the case of Paso de la Amada, Lesure (2011b) reframed the traditional temple vs. residence and public vs. private dichotomies in terms of formal and informal space, a dichotomy also inspired by the work of Bell. The formalization of space can promote traditional authority and reproduce social power (Lesure 2011b:122). The act of distinguishing a space through the differential use of architectural features (platforms, size, etc) would have also elevated the status of any activities that took place there, as well as the inhabitants of that space. In other words, the nature of the space will distinguish the activities taking place, certain activities will mark that space as special, and both processes will differentiate the inhabitants of that space. That formal spaces at Paso de la Amada were also residences and the loci of ritual performance suggests that the everyday activities of the aggrandizers who lived there were on display to the public (Lesure 2011b:141).

In the offerings at Paso de la Amada most of the strategies of Bell's *ritualization*, processes through which activities distinguish themselves, are evident. Of course, because practice cannot be witnessed as it occurs, context must be relied upon to infer ritualization. The most readily obvious is an element of *formalism*. The characteristic of formalism is extended to the bird offerings through their association with the formalized space that is Structure 4 at Mound 6 and Floor 1 at Mound 13. The act of their deposition is itself a formalizing feature that further differentiates their containing structures from others. As previously mentioned, the formalization of space can promote authority and reproduce social power (Lesure 2011b:122), as can the ritual-like activities that take place in these spaces. Both Structure 4 of Mound 6 and Floor 1 of Mound 13 have formal elements identified by Lesure (2011b), most notably that they are architectural platforms taller than 50 centimeters (2011b:123). Mound 6 in particular has all other "formal elements" described by Lesure, post molds and clay walls, a length greater than 10 meters, careful structure termination, subfloor offerings, ritual objects, and continuity of orientation, location, and function (2011b:123). That three out of four of these offerings occur in Mound 6, and in one structure alone, is significant. Structure 4 was the first in its sequence (preceded by Structure 5 and Structure 6) to be built on a platform, the first to be built with porches and steps, and was larger than any of its predecessors by 2.5 meters in length. The contrast of this structure to others would have distinguished any activities taking place, including the interment of these birds and any activity that preceded their deposition, such as the act of sacrifice.

Also apparent is an element of *traditionalism*. Traditionalism marks an act as distinctive by making it seem identical to or consistent with an older precedent (Bell 2009b:145). The four bird offerings are not the first offerings at Paso de la Amada. They were preceded by the greenstone celt in Structure 5 or 6 at Mound 6. The act of dedicating an object in the closing of a building/construction of a new one appears to be a practice with precedence, and thus the deposition of the birds may have been in part recalling a type of activity already performed in the past at the same location, that is, the interment of the greenstone celt in Structure 5/6. Later, the deer scapula and hematite were offered in Structure 2, an act which may have recalled the offering of the birds. This indicates that the practice of offering selected objects in building termination/construction was one that spanned from the occupation of Structure 6 to at least that of Structure 2, almost the entire known occupation of Mound 6.Placement of the offerings seems intentional, a practice which is also maintained through time. The celt and scapula were placed in the center of Structure 5/6 and 2 respectively, while the birds in Structure 4 were likely deposited where they were based on their symbolic associations. The relevance of traditionalism, however, is diminished when we take into consideration the fact that we see no bird offerings in later phases, throughout the site. Additionally, though there is an offering precedent to these birds, they are the first of their *kind* of offering, that is, the Locona phase sees the first and last offering of birds. No precedents were found at Mound 13, though excavations were not extensive in this area.

Evidence of *invariance* is wholly absent. That three birds were interred at Mound 6 initially suggests an element of invariance, or repetition and control. However, that all three were from Level 9 suggests that they were not interred at intervals, but all in one short time span, perhaps even in one performance. The act of offering a bird was repeated at Mound 13, but this also dates to the Locona phase; it is unknown at what moment in relation to the others it was deposited.

Rule governance may be an element of ritual practice at Structure 4. If the offered species were indeed chosen as representations of the three general vertical layers of the cosmos, then their deposition may have been guided by some spoken or unspoken rule that offerings be deposited in particular patterns, or that certain symbolic associations must be accounted for in the performance. However, like invariance, rule-governance becomes hard to assess when the act is not repeated. It is also one of the more difficult to identify archaeologically. Given the evident intentionality in design of the performance at Structure 4, that the event was rule-governed is likely.

In what Bell calls *sacral symbolism*, ritual can create and express the sacredness of the people, objects, and places involved. If the three species offered at Structure 4 were chosen to represent the vertical layering of the cosmos, the act of their deposition would have marked the locus of their deposition as sacred. Marking this building or the succeeding one as sacred would have lent ritual authority and power to its occupants.

While it is impossible to say that the act of depositing these birds was a *performance*, it is not unreasonable to assume that this was the case. Performance, as described by Bell (2009b), relies on complex sensory experiences, framing an activity as deliberate and different. Given what is known about Classic and Postclassic period rituals, it is more likely that the act of offering birds at Structure 4 was not a quiet performance witnessed by a handful of individuals who quickly threw down some birds and walked away. The nature of formalism at Paso de la Amada suggests that the lives and activities of the inhabitants of Mound 6 were constantly on display to other residents (Lesure 2011b:141). That two of the individuals were offered outside the walls of the structure on a step or porch, and that this structure was elevated above surrounding ones, suggests that the act of depositing these birds would not have gone unnoticed, and would have been accompanied by some level of ceremonialism. It would have been framed as a performance, because as such it could have relied on the element of formalism to affirm the status and prestige of those individuals involved in depositing the bird. That there are no precedents suggests that the act of offering birds was not a common, routine practice performed in all structure terminations, that these were more likely to have been performances. The same conclusion can be extended to Mound 13, but again, there is far less information about this mound than Mound 6.

Recall that ritual activity as practice exists only insofar as the activity from which it is distinguished exists. This being the case, ritual activity involving birds at Paso de la Amada is clearly differentiated from other types of practice involving birds (subsistence- and social-based). It achieves this contrast through the use of most mechanisms of *ritualization*. The remains resultant from ritual activity exhibit some degree of formalism, traditionalism, rule-governance, sacral symbolism, and performance. However, there does not seem to be any evidence of invariance, since this type of act was not repeated.

That all known offerings—birds, scapula, and greenstone—are exclusive to the Locona phase becomes significant when considered in light of temporal changes in the nature of ceremonialism at Paso de la Amada (Lesure 2011b). Based on changing distributions over time of the presence and absence of formal and informal elements at the site, formal Locona phase spaces appear to have become largely informal in the Ocós phase (2011b:137-140). This is also the case at Mound 6: even as Ocós phase platforms increased in size, they began to be home to increasing numbers of informal features such as platform-top burials and trash-filled pits, even at the front of the building, a space which was characteristically formal (Lesure 2011b:140; see this work for a discussion of what qualifies as formal and informal attributes). But even as differential formalism began to “erode” in the Ocós (Lesure 2011b:140), the prestige and power of the inhabitants of these spaces continued to increase. This suggests a change in the nature of ceremonialism at Paso de la Amada. High-status residences were replaced by specially built structures as the loci of public ritual functions (2011b:144). Thus, a shift in this direction explains a decrease in the intensity of offering activity at Mound 6 towards the end of the Locona phase at Structure 2, and an absence of Ocós phase offerings in general. As formerly formal spaces became informal, and as the venue for public ritual changed, fewer offerings were made at high-status residences. As no known offerings have yet been recovered from Ocós phase contexts, it would appear that the dedication of animals or objects as offerings ceases as ritual activity relocates to designated public spaces. This practice may, then, have been a domestic one intended to demonstrate the status of a house’s occupant(s).

Symbolic Depiction

That birds are symbolically important is also evidenced by of their manufacture in ceramic form. Almost all ceramic whistles recovered from Paso de la Amada are modeled after birds, with one or two heads, and all appear to be songbirds (Lesure 2000:200). Ceramic bird effigies are “naturalistic” as opposed to stylized, which means that they can, with some degree of reliability, be identified as a *type* of bird. In some cases they are depicted quite realistically, showing great detail in the eye and beak, even depicting the nares (nostrils) and cere (waxy structure that covers the base of the bill in some species). Types of birds depicted include birds of prey, waterfowl, owls, turkey, crested birds, and perhaps a parrot (Figure 7).

The sample discussed here comes from Mounds 1, 12, 13, 14, 21, and 32. Data on the effigies and whistles from Mound 6 are forthcoming, and thus the analysis performed here should be considered incomplete. At this preliminary stage, what seems apparent is that the frequencies of different types of birds depicted does not match their importance in the diet. This indicates that their depiction was not a simple unconscious reflection of subsistence reliance, but something more symbolically significant. The most frequently depicted type of bird appears to be waterfowl, followed by crested birds and birds of prey.

All effigies and whistles analyzed so far come from trash deposits, either midden or fill, and are found in both platform and nonplatform contexts from the Locona, Ocós, and Cherla phases. There is currently no evidence to suggest that these were distributed according to status, but this picture cannot possibly be complete without data from Mound 6.

Figure 7: Some bird effigies from Paso de la Amada. (a,b) owl, (c) waterfowl, (d) crested bird, (e) turkey, (f) vulture, (g) bird of prey. Photographs courtesy of Richard Lesure.

I would suggest that at least one of the crested bird effigies (Figure 8) was intended to represent a crested quetzal, most likely *Pharomachrus moccino*. The nature of its beak and crest (squared instead of swept-back, like that of *Cyrtonyx ocellatus*) match no other species of crested bird at the site as well as they do those of the quetzal. The quetzal is the second most depicted bird in the codices, second only to the eagle (Sharpe 2014b:16). The Aztec exacted as tribute from their provinces the feathers of as many as 31,000 Resplendent Quetzals (Peterson and Peterson 1992). That the Aztec consumed so many quetzal feathers, yet that the penalty for killing a quetzal was death (Benson 1997:75; Sharpe 2014b) indicates that feather procurement was obtained through plucking and release of these birds. The Resplendent Quetzal would have been available to the residents of Paso de la Amada, as close as the nearest cloud forest, 2,000 meters above Paso de la Amada. In fact, quetzal feathers were the third most important tribute item exacted by the Aztec empire from the Soconusco region (Gasco and Voorhies 1989:88-89). Twice a year, the Soconusco was required to give 800 quetzal feathers (Gasco and Voorhies 1989:77). While it cannot be known for sure, their almost certain depiction in ceramic form coupled with their known later significance and the recorded practice of plucking and release raises the possibility that this was practiced at Paso de la Amada as well, a practice which would unfortunately result in no archaeological signature.

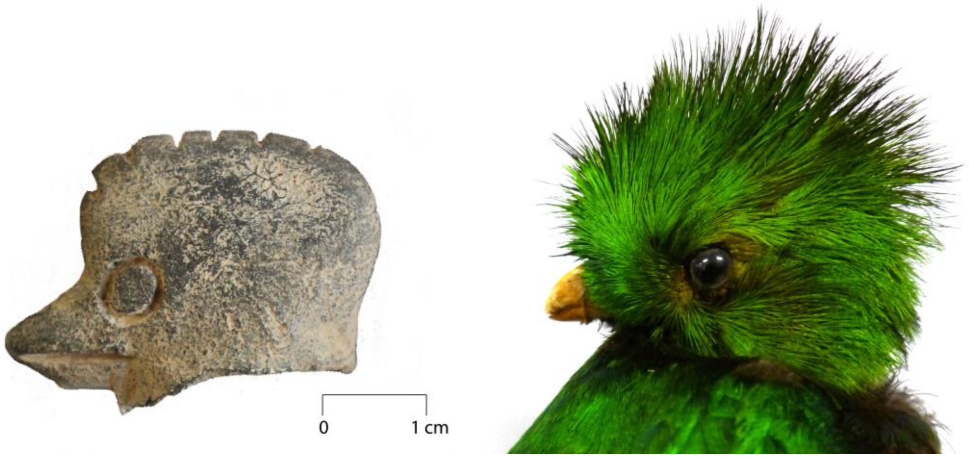


Figure 8: Crested bird effigy and head of Resplendent Quetzal (*Pharomachrus mocinno*). Effigy photograph courtesy of Richard Lesure; quetzal photograph by author, specimen provided by the Donald R. Dickey Bird and Mammal Collection.

Interpretation and Discussion

Understanding why certain birds were exploited is made easier by the fact that a number of known variables, such as habitat, behavior, and color, are observable. There are three primary motivations that can be seen to drive bird capture, concerns of subsistence, feather procurement for social use, or involvement in ritual performance. The correlates of these strategies overlap and can be difficult to distinguish between archaeologically. The inhabitants of Paso de la Amada were concerned with all three motivations.

At less than 2% of the overall vertebrate assemblage, birds were never a significant contribution to the diet. They were not the focus of any one foray to a non-adjacent ecological zone, but were taken when available and needed or desired as a supplemental food. Intensity of exploitation decreases with distance from the site, and capture is only relatively focused in the three outer ecological zones, this focus decreasing with distance. A fairly even presence of elements and a relative lack of burning and butchery indicate that birds were brought back to the site and most were cooked whole. Residents of both platform and nonplatform contexts appear to have had equal access to birds in both quantity and type.

Because the correlates of procurement for feather exploitation overlap with the other two strategies, and because feather use in this type of environment is often only indicated through indirect evidence, this strategy is difficult to isolate. There is no high intensity hunting of colorful birds, particularly those that are blue/green, or of birds of prey at Paso de la Amada. Those that were brought to the site were not available exclusively to platform residents, the homes of higher status individuals. Wings were not being taken for feather curation for later use. The skinning marks on the humerus of one *Accipiter striatus* and the tibiotarsus of one *Ara militaris* do suggest that these individuals had desirable feathers, though the former was also eaten after skin removal based on the unique roasting pattern present on the tibiotarsus of the same individual. Given the use of feathers in later periods it is not unreasonable to assume that this practice could have had a Formative period precedent. If this were the case, feather use reflected equal access to resources and egalitarian ideals in costuming, with no subset of the population having better access to certain types or colors of birds.

Strong evidence of the use of birds in ritual includes the presence of four whole or partly articulated individuals in primary context at Mounds 6 and 13. Bird offerings at Paso de la Amada were either of whole birds or an important part of the bird, such as the foot and talon of the Caracara or the wings of the Amazon parrot. These remains were offered in platform contexts only. The act of their deposition was differentiated from other activity through formalism (of space), traditionalism, rule-governance, sacral symbolism, and performance. The quality of invariance seems absent, though the fact that the act of depositing birds as offerings was not repeated in later times makes this criterion hard to assess. That the birds interred at Structure 4 may have been chosen to represent the vertical ordering of the cosmos supports Lesure and Blake's tentative suggestion that claims to authority at Paso de la Amada may have ben based in sacred knowledge and control of ritual activity rather than economically based (2002:19).

That feather use and access to birds as a food source was not controlled parallels the distribution of other artifacts at the site. A site-wide artifact analysis between platform and nonplatform contexts performed by Lesure and Blake (2002) concludes that any inequality was encoded in residential architecture and possible control over ritual activity rather than economically based in the distribution of wealth goods (2002:22). Despite the evident architectural investment in platform residences, the distribution of wealth items at Paso de la Amada is more egalitarian, and there is only minimal evidence of differential distribution in ritual items across platform and nonplatform contexts. This interpretation explains why there is minimal evidence that platform and nonplatform residents had differential access to birds as a food resource or to their feathers as a social tool.

That 5 out of the 6 known or likely offerings (including the celt and scapula) were found at high-status residences at Mound 6 also supports the suggestion that authority was perhaps ritually based. If status was affirmed through architectural differentiation and control over ritual activities, we would expect to find the vast majority of evidence of ritual activity at high-status residences. Mound 6 is the largest and most architecturally substantial sequence of residences at the site, and Structure 4 in particular was unprecedented in both size and design for its time. It is also significant that all six offerings occur in the Locona phase, a phase of potentially rapidly developing social inequality. If the first structure was established at Mound 6 at the beginning of the Locona phase, and if we estimate that each structure/floor is concurrent with a generation (Clark 1994:210), it would have taken minimally two, maybe three, generations for the status of the occupants of this mound to reach a level that resulted in unprecedented ritual activity involved in the closing of Structure 4 and the construction of Structure 3. After this point, social inequality continues to develop while the nature of ceremonialism at Paso de la Amada changes.

Conclusions

Birds could easily have been a suitable resource for manipulation by potential aggrandizers. The evidence of this is weak for subsistence and social strategies, but stronger for a ritual strategy. It can be concluded that access to birds as a food source was not controlled through sumptuary rules or restricted access as an exchange good by a higher-status subset of the population, and that feathers *could* have been a tool for social display. While the use of birds in ritual offerings was almost certainly a public affirmation of status through performance, bird offerings do not continue past the Locona phase, perhaps because of the changing nature of ceremonialism in the Ocós phase. There appears to be no extensive, repetitive, encompassing ritual complex like that at Tenochtitlan, no intensive exploitation of feathers for social display like that in the Pacific Islands, and no overwhelming control of birds as a food resource. All of this suggests that in the early stages of the emergence of hereditary inequality at Paso de la Amada, bird consumption and feather use was as of yet relatively informal and ad hoc, instead of a tool used frequently to create and affirm the status of platform-resident social aggrandizers. The involvement of birds in ritual, on the other hand, does appear to have been a tool used to affirm the status of the inhabitants of Structure 4 or 3 at Mound 6, through the direct mapping of the vertical layering of the cosmos onto physical space.

Further work on the role of avian fauna in ritual in Formative period Mesoamerica would benefit greatly from a comparative analysis of other contemporaneous sites. Unfortunately, most assemblages currently lack the detailed species identifications from which the Paso de la Amada assemblage benefits. It is only in making these detailed identifications that avian faunal assemblages can inform research into many aspects of prehistoric life. With subsequent analyses, a better understanding of the role of birds in situations of emergent complexity in Formative period Mesoamerica can be obtained.

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