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# Anthropology and GIS: Temporal and Spatial Distribution of the Philippine Negrito Groups

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## **Abstract**

The Philippine "negrito" groups comprise a diverse group of populations speaking over 30 different languages, who are spread all over the archipelago, mostly in marginal areas of Luzon Island in the north, the central Visayas islands, and Mindanao in the south. They exhibit physical characteristics that are different from more than 100 Philippine ethnolinguistic groups that are categorized as non-negritos. Given their numbers, it is not surprising that Philippine negritos make up a major category in a number of general ethnographic maps produced since the nineteenth century. Reports from various ethnological surveys during this period, however, have further enriched our understanding regarding the extent and distribution of negrito populations. Using the data contained in these reports, it is possible to plot and create a map showing the historical locations and distribution of negrito groups. Using geographic information systems (GIS), the location and distribution of negrito groups at any given time can be overlaid on historical or current maps. In the present study, a GIS layer was compiled and extracted from the 2000 Philippine Census of population at the village level and overlaid on existing maps of the Philippines. The maps that were generated from this project will complement ongoing anthropological and genetic studies of negrito groups that inhabit different locations within the Philippine archipelago.

## **Keywords**

Negritos, Philippines, GIS, Linguistics, Census Data

## **Cover Page Footnote**

Guest Editor's Note: Sadly, Dr. Padilla passed away before being able to amend the paper according to the reviewers' comments. Therefore, the readers should take into account that this paper is not the finished article. I have included it as a tribute to the author and to provide valuable information to scholars interested in the Philippines. The editorial decision I sent to the Author, after the reviewing process, is provided at the end of the paper. I would like to thank Dr. Maria de Ungria (University of the Philippines) who has helped with some amendments to the original article.

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## ***Anthropology and GIS: Temporal and Spatial Distribution of the Philippine Negrito Groups***

SABINO G. PADILLA, JR.<sup>1\*</sup>

*Abstract* The Philippine “negrito” groups comprise a diverse group of populations speaking over 30 different languages, who are spread all over the archipelago, mostly in marginal areas of Luzon Island in the north, the central Visayas islands, and Mindanao in the south. They exhibit physical characteristics that are different from more than 100 Philippine ethnolinguistic groups that are categorized as non-negritos. Given their numbers, it is not surprising that Philippine negritos make up a major category in a number of general ethnographic maps produced since the nineteenth century. Reports from various ethnological surveys during this period, however, have further enriched our understanding regarding the extent and distribution of negrito populations. Using the data contained in these reports, it is possible to plot and create a map showing the historical locations and distribution of negrito groups. Using geographic information systems (GIS), the location and distribution of negrito groups at any given time can be overlaid on historical or current maps. In the present study, a GIS layer was compiled and extracted from the 2000 Philippine Census of population at the village level and overlaid on existing maps of the Philippines. The maps that were generated from this project will complement ongoing anthropological and genetic studies of negrito groups that inhabit different locations within the Philippine archipelago.

The Philippine “negrito” populations comprise a diverse group of peoples who share common phenotypic characteristics of having dark skin and exhibiting a “pygmy type” body frame. The popular description of a member of this group is

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KEY WORDS: NEGRITOS, PHILIPPINES, GIS, LINGUISTICS, CENSUS DATA.

as follows: small in size, sporting kinky hair, wearing a G-string, living in a band, and roaming around inside the forest to subsist mainly by hunting or foraging. This was the “negrito myth” aimed to either scare children or instill in the minds of the lowland population how lucky they were to be civilized and Christianized. The term *negrito* and its usage have been criticized for lack of cultural sensitivity and for clinging to racial categories of our colonial past. Fully aware of this issue, the use of this term in this article is neither pejorative nor a result of a cultural bias but, rather, is due to the current unavailability of a “proper” term to generally refer to these people.

Population data show that at present Philippine negritos are spread all over the Philippine archipelago and are known by various names, among them Agta and Atta in northeastern Luzon; Aeta, Ayta, Alta, and Arta in Central Luzon; Ati or Ata in the central islands of Panay and Negros; Batak in Palawan; and Mamanwa in Mindanao. Various names are also used by their Christian neighbors that have even become a part of their consciousness, such as Pugot (black person), Baluga (mixed race), and Dumagat (seafaring people) on both sides of the Sierra Madre, especially along the eastern coast of Luzon to Bulacan, Quezon, and Rizal within Central Luzon. Even the Remontado population of Bulacan and Rizal Provinces (lowland peoples who decided to live in the mountains to escape the clutches of Spanish colonization) now prefer to be referred to as Dumagat (but see Reid, this issue, for a comprehensive discussion of the origins of Dumagat). In Mindanao the Mamanwa are called Kongking, derived from the Spanish word *conquista* (conquered). The etymology of their group name means “tao” or person. There is an erroneous notion that these names were all derived from the Malay *hitam* (black) or its cognate in the Philippine language, *itim* or *itom* (Padilla 2000b). There are groups that accept their classification as belonging to negrito type; groups that have been categorized as negrito in the literature, like the Ata Manobo in southeastern Mindanao and the Iraya Mangyan in northern Mindoro; and those who are known in anthropological literature and described as “mixed race,” for example, the Remontado of Bulacan and Rizal Provinces, the Ati who have been grouped with the Sibuyan Mangyan, and the Remontado in Sibuyan Island in Romblon Province.

The Filipino negrito populations have been on the decline since the 1900s from Cape Engaño in the north to as far as Surigao and Davao Gulf in Mindanao in the south (Beyer 1917, 1921 [Editor’s note: see Appendix for data from Beyer]; Blumentritt 1890, 1916; Garvan 1964; Keesing 1962), when the first estimate of their number was placed at around 35,000 individuals. Linguistic studies revealed the existence of 25–34 negrito groups, all of which had been categorized as Austronesian. With a current aggregate population of 15,000 people, four of the languages are already extinct, and the rest are endangered (Headland and Early 1998; Headland 1989; Headland and Headland 1993; Griffin 1984; Reid 1987).

The negrito ethnogenesis is a complex anthropological question. Bellwood (1997) refers to coastal and forest foragers as “one of the small populations that show historical relevance in the Indo-Malaysian region.” They were found in the Andaman Islands, in Southeast Asia and Australia. It is widely accepted today that

they roamed and foraged on these territories some 4.5–5 kya until the arrival of Austronesian speakers who had an agricultural economy. The interactions of these populations have been the subject of debate by two competing models of hunter and gatherers versus agriculturists (Headland and Bailey 1991). Some scholars believe that hunters and gatherers have been isolated and their access to agricultural commodities is fairly recent. Reid (1989), drawing on the linguistic evidence of modern Philippine negritos, argued that they “moved into the forest to collect wild products to trade with agriculturalists and overseas traders for tools and starch food.” Their present interdependence with neighboring farming communities must have been a result of thousands of years of prolonged and intense contact, to lose their original language and to adopt the Austronesian language.

## **The Negrito of the Past**

The diversity of the Philippine population with particular reference to negritos had been observed by a number of authors, with the twelfth-century work of Chao Ju Kua (Hirth and Rockhill 1970) probably the earliest written record about a race inhabiting the interior of the valleys. The Spanish explorer Antonio Pigafetta, who was with Magellan in 1521 noticed that there were “black men like those in Ethiopia” living in the island of Panilongon (Panglao). The island of Buglas west of Cebu was named Negros by the Spaniards. In 1582, the Spanish conquistador Miguel de Loarca reported that people in Mindoro lived in the mountains and gathered large quantities of wax. The 1590 Boxer Codex carried a negrito illustration and reported that in Cagayan Province, “isolated by the streams in the harsh mountains there lived a number of Negros.” The Jesuit Pedro Chirino related that some blacks lived among the Bisaya. They were a people “not so dark or ugly as are the natives of Guinea . . . very diminutive and weak,” and their hair and beard looked very similar.

Spanish missionary Father Francisco Colin explained the Spaniards’ use of the term *Negrillos* in this manner: “Because many of them are as much Negroes, as are the Ethiopians themselves, both in their black color and in their kinky hair.” They were also described as a “barbarous race who live on the fruits and roots of the forests” (Colin et al. 2009). Their nakedness was spurned as they were covered only by bark of trees or the “*bahaques*, no ornaments other than rattan armllets, anklets, bracelets of various colors, garlands of branches and flowers on their heads and arms,” and with “some cock or sparrow-hawk feather for a plume.” These observations were likewise shared by the Franciscan Juan Francisco de San Antonio and the Augustinian Antonio Mozo and became a recurrent theme for their description in most religious Spanish reports. From various documents, “Negrillos” and later “Negritos” would be the official colonial categorization for groups who lived in the interior of mountains and who remained uneducated. They were contrasted with the *Indios*, who were within the confines of the Spanish missions, *monteses* for the native populations outside their grasp, and *remontados* for people who escaped Spanish conscriptions and tributes.

The heated debate on social evolution and diffusion of human races that pervaded the scientific world during that time coincided with a renewed interest on the ethnology of negritos during the nineteenth century. Interest in the origins of the Philippine negrito populations was kindled by European scholars. Notable among them were Carl Semper, Joseph Montano, Ferdinand Blumentritt, Adolf Bernhard Meyer, and Rudolf Virchow, who conducted ethnographic fieldwork and collected archaeological and cultural materials, as well as human remains, while exploring the Philippines. The issue of pure versus mixed race or half-breeds also dominated their works.

Semper in his *Die Philippinen und ihre Bewohner* (1869) wrote a whole chapter on negritos covering such topics as their distribution in Mindanao, Negros, Alabat Island in Luzon, Mount Mariveles and the Zambales Mountains, and the east coast of Luzon near Baler to Cape Engaño. Semper believed in the presence of a Stone Age population in the Philippines because of the stone tools he found in Mindanao. The physical differences between the negritos and the African Negroes, with the negritos “not of so dark a tint,” was duly noted by the *Journal of Anthropology* in 1870, reviewing the work of Semper as “a strong proof of the great room there is for more precise and reliable evidence respecting these singular people.” They were called Asiatic or Austral Negroes.

Joseph Montano’s *Een reis naar de Philippijnen* (1886) was a travel account for a scientific mission to the Philippines supported by France’s Ministry of Education. Arriving in the Philippines on 21 July 1875 for ethnographic fieldwork, he traveled extensively and collected human bones and cultural materials until 1881. Montano studied the negritos in the Sierra de Mariveles of Bataan, Luzon, who were “living in harmony with the Tagalog.” He stressed that “from an anthropological perspective [they] strongly deserve attention” for they were in his mind the original inhabitants of the country. It was also reported that Bataan negritos were very similar to the African negroes and people of New Guinea and that their appearance was not repulsive and no different from the natives of Malacca peninsula. In Davao, Montano met the Ata, as the Bisaya called the negritos. He traveled to Agusan, Surigao, and Lake Mainit, where he learned about the Tagabawa, Guianga, Samal, Tagacaolo, Mandaya, and Manobo and their enmity with the Spanish and Moro, as well as the presence of half-breeds. Overcome by fatigue and illness, he failed to explore Northern Luzon before returning to Europe in April 1881.

Blumentritt, despite never having traveled to the Philippines, was able to write a number of articles on the negritos based on his correspondence with various anthropologists, travelers, and Filipino friends that included José Rizal, the Philippines’ national hero. One of his important works was the book titled *An Attempt at Writing a Philippine Ethnography* (1890), which he dedicated to Meyer and the ethnologist Andreas Fedor Jagor. The book argued that the negritos were the aborigines of the Philippines and were pushed to the interiors by three successive Malay migratory invasions. He posited that the tribes inhabiting the mountain regions of Northern and Central Luzon were the descendants of the first wave that intermarried with the natives, while the coastal population that included the Tagalog,

**Table 1. Distribution and Presence of Negritos in the Luzon Islands, Mindoro, Panay, Negros, Bohol, and Palawan (Meyer 1899)**

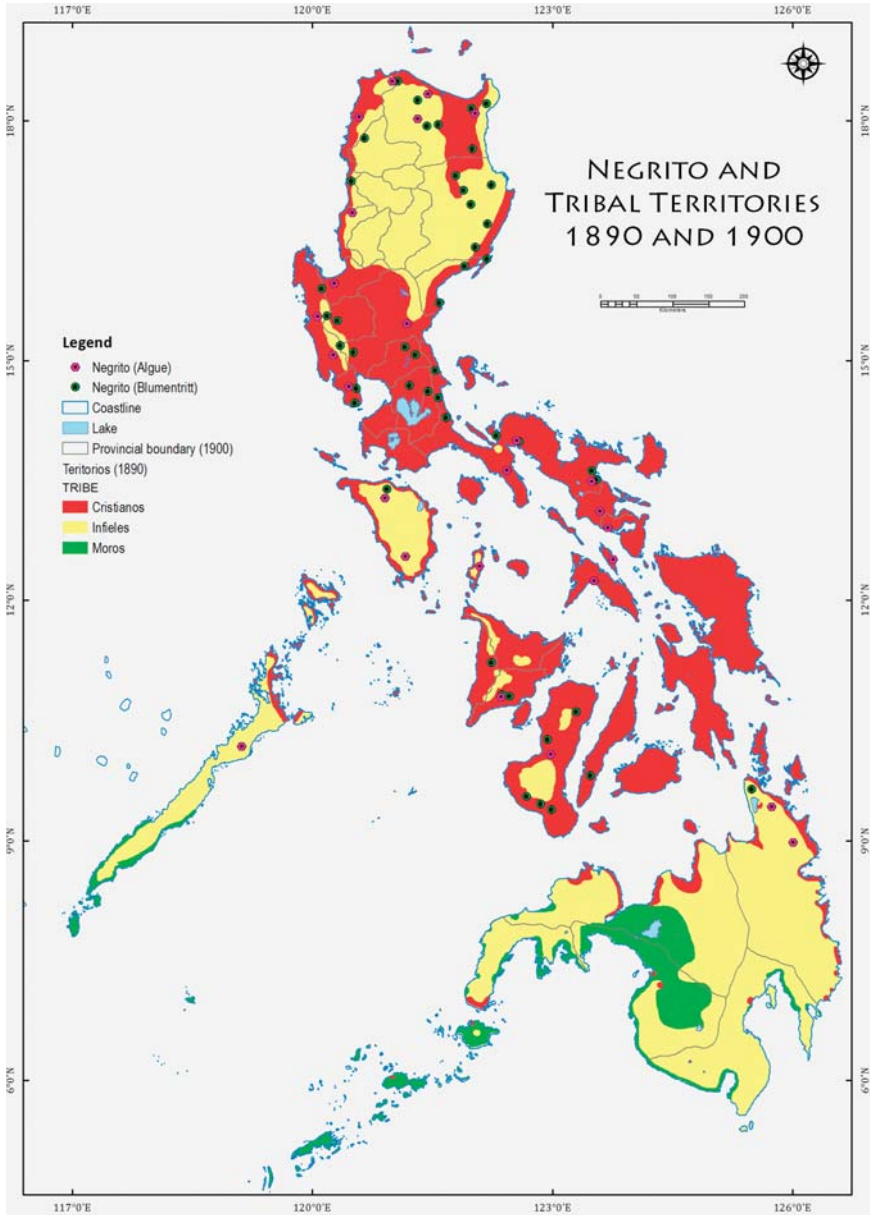
WITH CERTAINTY	QUESTIONABLE
Alabat	Guimaras
Corregidor	Mindoro
Tablas	Calamianes
Negros	Samar
Cebu	
Northeast Mindanao	
Palawan	

Bisaya, and Ilocano constituted the second wave that displaced the first wave. The third wave of Malays that spread Islam was disrupted and hindered by the colonization of the Philippines during the sixteenth century. Blumentritt described negritos, 51 Malay groups, and non-native populations. A map showing the location of these populations and those of the Christianized population, “infeles,” and “moros” was one of the earliest general ethnographic maps of the Philippines (Figure 1). This was reissued as *Mapa Etnografico del Archipelago Filipino* (1890).

Meyer was the director of the Royal Zoological, Anthropological, and Ethnographical Museum at Dresden. His work titled *The Distribution of the Negritos in the Philippine Islands and Elsewhere* (1899) was an evaluation of 21 of Blumentritt’s works, his own data he collected during his 1872 visit to the Philippines, and those of other writers on the Philippines. For him, Blumentritt was the only writer who produced “noteworthy” articles on the negritos, while the works of Montano and Alfred Marche should be treated with caution and T. H. Pardo de Tavera’s work should not be taken seriously, for to him it was a work of plagiarism and may be designated as “half invention and half misapprehension.” He reviewed the distribution and presence of negritos in the Luzon islands, Mindoro, Panay, Negros, Bohol, and Palawan. The results of his evaluation are shown in Table 1.

## The American Ethnological Survey

The hypothesis that the negritos were the original inhabitants of the island who were displaced by waves of migration, resulting in three racial categories (negritos, Indonesians, and Malays), was reintroduced and sustained during the American colonial period in the Philippines. Voluminous works were published from the 1900s until the outbreak of World War II. During this period, negrito reports published by religious missionaries during the Spanish period were investigated by the Bureau of Non-Christian Tribes (BNCT), which was established in 1899 and reorganized into the Ethnological Survey for the Philippine Islands in 1903. The natives became an item of curiosity for American anthropologists and part of general history books (Barrows 1924; Worcester 1899; Foreman 1905), government census reports (Barrows 1902; Beyer 1921), scholarly journal articles or monographs (Brinton



**Figure 1.** General ethnographic map of the Philippines according to Blumentritt (1890) and Algué's Atlas de Filipinas (1900). Major geopolitical features are shown.

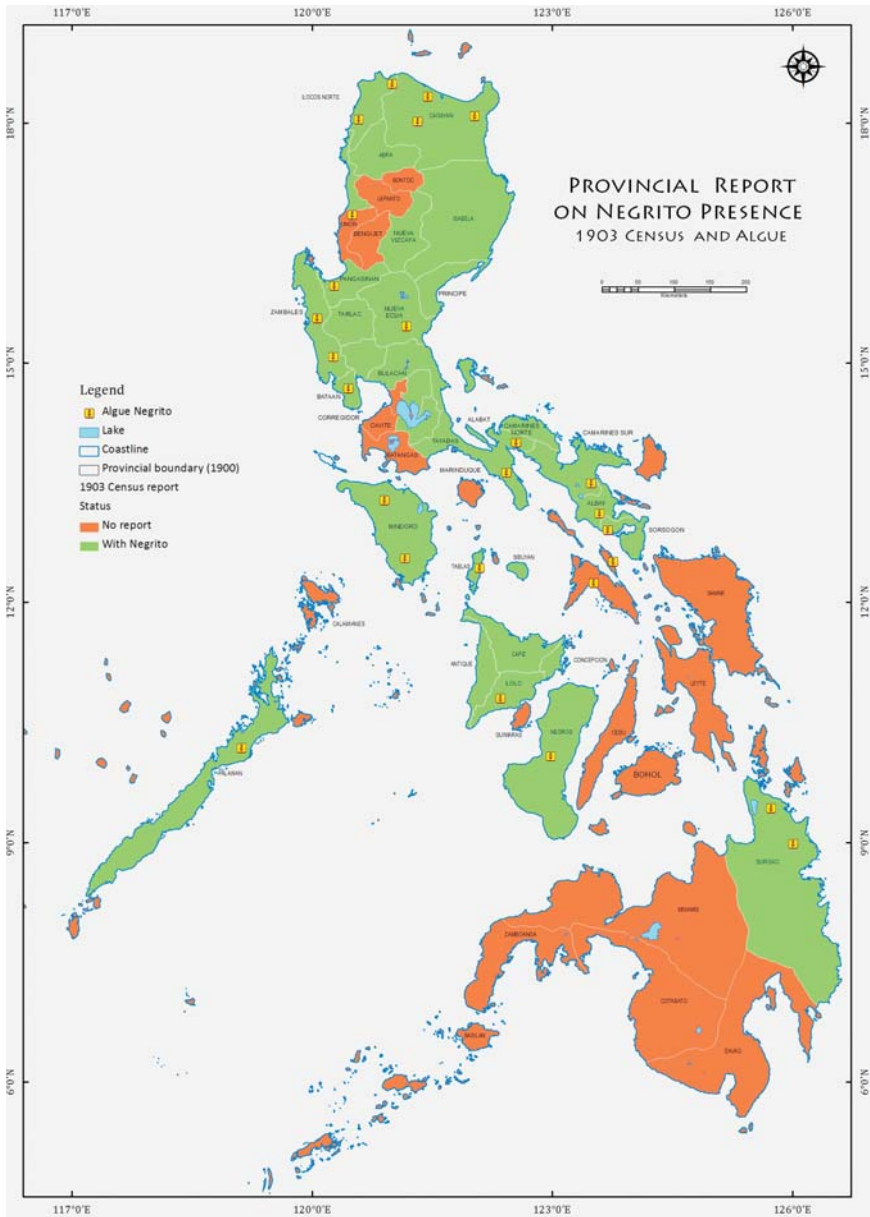


1898; Cole 1909; Worcester 1906; E. Y. Miller 1905; M. L. Miller 1911; Garvan 1964), and travel and human interest magazine stories (Worcester 1912a, 1912b, 1913; Turnbull 1929, 1930; Maceda 1937).

The diligence of the colonial administrators to locate and enumerate the various negritos and pagan populations was remarkable. The Americans in 1899 sought the services of the Jesuit director of the Manila Observatory, Father José Algué, to produce the *Atlas de Filipinas* (1900), a collection of 30 maps for the U.S. Coast and Geodetic Survey. His contribution to Philippine ethnography was his *Mapa Etnografico*, which illustrated the Philippine territories between “*crístianos hispano-filipinos*,” “*crístianos nuevos y de los infieles*,” and “*moros*” (Figure 1). Algué identified 69 different population groups and categorized them into negritos (some are displayed in Figure 1), Indonesians, and Malays. He identified seven groups as “*Raza Negrita*,” with “*Negrito*” designated as group 1, comprising 11 subgroups. Igorrote was listed group 6 and was located in Palawan. Balugas, group 29, was enumerated in the “*Raza Malaya*,” as was group 39, Abunlon (Aburlen), and group 48, Tinitianos (Batak). The 1903 census of the Philippine islands (Sanger et al. 1905) included a colored map titled “*Distribution of Civilized and Wild People*” featuring 16 groups of wild populations, which included negritos, and 8 groups considered civilized. David Barrows, BNCT chief, wrote a lengthy article on Philippine “*Christian and civilized tribes*” and “*non-Christian population*” (1910). The census reported that negritos were found in the provinces of Cagayan, Isabela, Ilocos Norte, Nueva Eicja, Bulacan, Rizal, Pangasinan, Tarlac, Zambales, Abra, Bataan, Ambos Camarines, Albay, Romblon (on the islands of Tablas and Sibuyan), Mindoro, Paragua, Capiz, Antique, Negros Occidental, Negros Oriental, Surigao, Sorsogon, Iloilo, Davao, and Tayabas (Polilio, Alabat, Calaguas, Homalig, and Bataranan) and on the small forested island of Boracay of the northwest cape of Panay (Figure 2).

Dean Worcester, who previously visited the Philippines in 1887 and 1890, was among the colonial administrators who displayed a keen interest in learning about the conditions of the native peoples so as to understand and “civilize” them. He served in the first Philippine Commission in 1899 and was later appointed as secretary of the Department of Interior in 1901–1913, which oversaw the BNCT. His early work on the non-Christian tribes of Northern Luzon was a comparison of Blumentritt’s and the Jesuits’ lists of classification and distribution (Worcester 1906). His collections of photographs and notes, known as “*Head-Hunters of Northern Luzon*” and “*Non-Christian Peoples of the Philippine Islands*,” were published by the *National Geographic* (Worcester 1912a, 1912b, 1913).

H. Otley Beyer (1917), who accessed the works of Barrows (1902), Worcester (1912a, 1912b, 1913), Cole (1909), and Reed (1904) on the negritos, boasted that the data in his *Population of the Philippine Islands in 1916* contained a “fairly accurate estimate” of the population of the archipelago. The negritos were under the “*Unclassified Pagan Peoples*,” which he considered aboriginal primitive types and further categorized groups into “*Distinct Negrito and Negroid*” and “*Non-Negroid or Semi-Negroid*” types. Their total population was 35,926 at the time. In the 1916



**Figure 2.** Provincial negrito presence according to the 1903 Census of the population (Sanger et al. 1905). The negrito groups studied by Algué (1900) are shown as in Figure 1. [Editor’s note: Owing to the unfortunate demise of Dr. Padilla, it has proved impossible to increase the size of the provincial labels that are unreadable.]

census, Beyer introduced “Pygmy” as a new classification of negritos with “three distinct aboriginal races”: the true negrito, Proto-Malay, and Australoid-Ainu (Beyer 1917). His geographical distribution carried the same pattern from his previous work: Apayao Swamp Region, Ilokos Mountains, Zambales Mountains, East Luzon Mountains, South Luzon Mountains, Bisayan Islands, and Mindanao.

Clearer information on the negritos of the east coast of Luzon, Apayao, and western Cagayan was supplied by the ethnological work of the Belgian missionary Father Morice Vanoverbergh (1937–1938). Material concerning other areas was later provided by Generosa Maceda on the Remontados of Rizal (see, e.g., Maceda 1937) and Dumagats of Famy and by Turnbull (1929, 1930) on the Casiguran Agta.

### **Contemporary Negrito Research and Mapping**

A perusal of contemporary negrito research focused on Luzon, specifically the northeastern coast of the Sierra Madre, shows that the anthropological research of Bennagen (1977, 1985), Headland (1975a, 1975b, 1984, 1989), P. B. Griffin (1981, 1984; Griffin and Estioko-Griffin 1985), M. B. Griffin (1996), Peterson (1977, 1978a, 1978b), and Rai (1985, 1990) displayed outstanding scholarship on the Agta of this area.

In the summer of 1994, under the auspices of the National Commission for Culture and the Arts and AnthroWatch, together with a team of anthropologists, I explored the eastern coast of the Sierra Madre from Cape Engaño to Palanan. This 200-km journey, mainly done on foot, was aimed at mapping and photo-documenting the Agta communities (Padilla 2000a). The project was repeated in 1996 during the centennial of the Philippine Revolution, in order to commemorate the route taken by the Americans from Casiguran to Palanan in order to capture the first Philippine president, Emilio Aguinaldo. Another attempt was made in 1998 to cross the Sierra Madre to Umiray, Quezon Province, by way of Bulacan and Montalban, Rizal. The last two ethnographic surveys were aided by a Global Positioning System (GPS) in documenting the Agta locations. These projects were discussed in Padilla (2000a, 2000b) and in Galang (2006). The research of Minter (2010) on the Agta of the Sierra Madre was the latest research work on the area.

Only a few scholars ventured among the following negrito groups: the Mamanwa (Maceda 1964), Batak (Eder 1987, 1988; Cadelina 1985; Novellino 1999, 2009), Ati of Panay-Negros (Cadelina 1974, 1980; Rahmann 1975; Rahmann and Maceda 1955, 1958, 1962), or Ayta of Central Luzon (Fox 1952; Shimizu 1989). However, studies on negrito languages have grown over the years (Reid 1987, 1989, 1994). Reid argued that languages of Philippine negritos showed evidence of a non-Austronesian substratum and hypothesized that the negritos creolized an early pidgin, or trade language, that they used as a means of communication with immigrating Austronesians.

More recent attempts to create an ethnographic map with a general negrito location and distribution were a mere repetition of the works of Beyer and Algué. In 1969, Manuel Elizalde and Robert B. Fox presented a distribution map

accompanying their book titled *The Cultural Minorities of the Philippines*. Beyer's ethnographic map was part of the publication of the Commission on National Integration, renamed from the Bureau of Non-Christian Tribes in 1946, in outlining the government agency's accomplishment for 10 years.

Rosa Tenasas and Leonisa Ramas prepared "A Map of the Better-Known Cultural Minorities of the Philippines" for the special issue of *Philippine Quarterly of Culture and Society* in 1974. That same year, the National Museum of the Philippines came out with *The Filipino People* (Fox and Flory 1974), which listed 126 ethnolinguistic groups categorized according to religion, for example, Christian, Muslim, and indigenous religions.

The most popular map among these is the 1988 National Council of Churches in the Philippines–People's Action for Cultural Ties map, which lists 60 groups. Criteria for inclusion/exclusion in the map, as well as source of population data, were not included in this map. The most recent map, titled *Philippine Culture and Ecosystems Map*, was published by Environmental Science for Social Change in 1998. The distribution and location of groups were patterned after Fox and Flory's map and used additional categories of "sea based culture, mainstream culture and upland culture."

However, Yengoyan (1964), in 1955, based on languages recorded by the 1939 census, was the earliest attempt to correlate population and language speakers. Language mapping greatly increased our understanding of the location and distribution of Philippine negritos over the years following the publication of "Linguistic Atlas of the Philippines" (McFarland 1983) and *Language Atlas of the Pacific Area* that feature some discussions and maps of Philippines languages (Wurm and Hatori 1981). Today, numerous maps are available but the most authoritative on the subject matter is by the Summer Institute of Linguistics (Lewis 2009).

Work on negrito genetics was pioneered by Keiichi Omoto and colleagues (1978/1981; Omoto 1985, 1988; Matsumoto et al. 1979). In 2009, five negrito groups were included in a large multicenter genome-wide autosomal survey of Asian populations (HUGO PanAsia 2009). In this study, Philippine and Malaysian negrito groups were found to differ from neighboring populations. The work by Stoneking and Delfin (2010) based on a genetic model derived from both mitochondrial DNA and Y-chromosome data on shared older haplogroups suggested that the Philippine negritos, including the Malaysian Semangs, Andamanese, and Australian aborigines, belong to the early human southern to northern migration and colonization route of East Asia. Delfin et al. (2011) surveyed 90 individuals from 16 Filipino ethnolinguistic groups, including six negrito groups, from across the Philippine archipelago. The study reported extreme diversity in the Y-chromosome lineages of Filipino groups, with heterogeneity seen in both negrito and non-negrito groups, which does not support a simple dichotomy of Filipino groups as negrito versus non-negrito. Reich et al. (2011) revealed in another study that the Mamanwa inherited genetic materials from the Denisovans, an archaic hominin group from Siberia, and indicated that its gene flow went toward the common ancestors of New Guineans, and Australian aborigines as well.

An extensive research on their population genetics is currently underway by the Philippine Pan-Asia SNP (single-nucleotide polymorphism) Initiative of the University of the Philippines, funded by the Department of Science and Technology. This landmark population study on Philippine negritos will assess and document the precise level of genetic diversity among Asian peoples and ethnicities. This study is being carried out with the participation of the National Commission on Indigenous Peoples, AnthroWatch, and indigenous peoples.

## **Negrito Mapping Methodology**

Geospatial technologies such as GPS, laser range finders, and remote sensing allow the scientific and academic community and even indigenous peoples organizations to understand the relationships of culture and the environment. It is a valuable research method for knowing, protecting, and rehabilitating the environment if understood in the context of human practices.

The Geographic Information System (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. The most basic level where GIS operates is computer cartography (i.e., mapping). It incorporates geographical features with tabular data that may then be represented by coordinate pairs ( $x,y$ -coordinates or longitude, latitude). GIS mapping makes use of *points* that indicate the location of villages. A series of continuous dots that form a *line* can represent a river, streets, streams or trails. A closed area or *polygon* may be used to indicate the border of indigenous peoples ancestral territories or language limits. The tabular data (database) of nonspatial information or such attributes as language or number of speakers about a geographic feature are linked and stored in a table and become a source of additional information about each of the spatial features. The power of GIS is in the combined use of spatial data and the associated information as an effective tool to help address environmental changes and social concerns of the community. It effectively addresses such questions as where things are, the density of people or resources within a given area, finding what is nearby, and changes in the area over time.

**Geographic Information System (GIS) Process.** Using old maps that had been produced over the years, a historical GIS approach may be very useful in understanding the diversity of a population and its dispersal. Maps published during the nineteenth century, particularly the work of Blumentritt (1890) and Brinton (1898), were used (see Figure 1). These were analyzed and compared with the ethnographic accounts of that period particularly Meyer's account of Philippine negritos. Likewise, numerous maps were produced during the American colonial period before the outbreak of World War II. Maps of Algué and the 1903 census (Sanger et al. 1905) were used (Figure 2). I also consulted the works of Miller, Cole, Reed, Vanoververgh, and the various ethnographies published on the negritos and other people under the category "non-Christian population" in from the 1900s through the 1940s.

**Table 2. List of Negrito Languages in the Philippines, 2000 Census (National Statistics Office 2000).**

Abelling	Batak/Binatak	Mamanwa
Abiyan	Cimaron	Manobo/Ata-Manobo
Aeta/Ayta	Dumagat (Umiray)	Negrito
Aggay	Iraya	Remontado
Agta	Isarog	Tabangnon
Atta/Ata/Ati	Kabihug	

For the contemporary data, the latest 2010 census on the ethnicity variable was not released by the Philippine government. The current available barangay (village)-level population data used in this study were taken from the 2000 census (National Statistics Office 2009) that contained data on language and number of speakers at the village level in the entire archipelago. It listed a number of ethnolinguistic groups, including known negrito languages. Based on the official 2000 census list, this study considered as negrito languages those shown in Table 2.

Visualization is the process of putting the maps together. The general locations of the negrito villages were included to aid in visualizing the general distribution of the different groups. These were not the “exact” locations of the communities—exact locations of original communities needed for titling indigenous peoples lands may only be mapped using actual GPS readings or geodetic survey data provided by the National Commission on Indigenous Peoples.

**Limitations.** Digitizing old maps is one of the great challenges in constructing a historical GIS. These maps were drawn by cartographers during the eighteenth, nineteenth, and early twentieth century. To place them in the “proper” location on earth’s surface is a tedious process. In this study, the Georeferencing tool ArcGIS 10 ([www.esri.com/software/arcgis/arcgis10](http://www.esri.com/software/arcgis/arcgis10)) was used, as well as the convenient Add layer data command of Google Earth ([www.google.com/earth/](http://www.google.com/earth/)).

The number of negrito language speakers was derived from the official government census, but data were collected by persons not familiar with the culture and language of negrito speakers. This may have introduced some discrepancies between the reported and actual number of negrito speakers in a given area. In fact, I have personally encountered many inconsistencies in the 2000 census based on our work with the communities. In addition, some members of indigenous communities may have been ashamed to acknowledge their ethnicity to the census taker. We also found some negrito languages like Abellin, Abiyan, or Dumagat to have speakers outside of their native area. The additional data were collated and included in the present study.

## **Mapping Results**

The areas described and reported by authors in the nineteenth and early twentieth century, when plotted and layered with current data, reveal that the general locations and distribution of Philippine negritos have remained unchanged and are still within their natural territories. Thus, based on the spatial data, the current distribution of Philippine negritos may be clustered into seven different ranges: Western Cagayan, Northern Sierra Madre, Southern Sierra Madre, Central Luzon, Southern Luzon, the Island Group, and Mindanao.

Mobility and dispersal of Philippine negritos may be attributed to a number of factors. The encroachments by migrant settlers into their traditional hunting range were significant and were made possible by the state's social intervention programs, such as resettlement for peasants affected by lowland agrarian conflicts. Projects such as the opening of large tracks of forest land to logging for needed fiscal revenues also contributed to the intensification of resource competition between the indigenous and an increasing migrant population. Suffering from deep-seated marginalization and disparity in economic opportunities as Philippine negritos slowly become more incorporated to the state has led them to retreat further in the forest and to eventually let go of most of their native lands.

A significant number of Philippine negritos have also been taken to reservations by the government and religious missions. Some persons have discovered it commercially viable and profitable to be ambulant vendors and market their medicinal and magical paraphernalia in cities. Others have been recruited into the sugar plantations of Panay and Negros, resulting in large-scale dispersal of the Ati communities of these islands.

The civil strife and the ongoing guerrilla war in the rural areas between the government and the communist New Peoples' Army have also affected the mobility of the Philippine negritos because their native lands are the sites of encounters between the two groups. Mass evacuations of Philippine negritos continue to occur, resulting in many persons becoming internal refugees and dependent on the state for subsistence.

Natural calamities have also caused the dispersal of different Philippine negrito groups, as in the case of the Central Luzon Ayta groups after the eruption of Mount Pinatubo in 1991 (Shimizu 1989, 2001; Fondevilla 1991; Bautista 1999).

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## Appendix

**Table A1. The Unclassified Pagan Peoples (1916), According to Beyer (1917)**

TYPE	LOCATIONS	POPULATION
<i>Distinct negrito and negroid</i>		35,926
Apayao Swamp Region	Eastern and northern portions of Apayao, Western border of Cagayan	4,500
Ilokos Mountains	Ilokos Norte, Ilokos Sur in the vicinity of the Abra boundary line	415
Zambales Mountains	Bataan, Zambales, western Pampanga, Tarlac, southwestern Pangasinan	9,186
East Luzon Mountains	Mountain ranges of eastern Luzon: Cape Engaño to Lucena (Cape Engaño, Palanan, Kasiguran, Baler, Pacific side of southern Tayabas, Polilio Island, Alabat Island, near Baggao); eastern parts of Cagayan, Isabela, Nueva Vizcaya, Nueva Ecija, Bulakan, Rizal, Laguna; western part of Tayabas	12,500
Southern Luzon	Mountain region of peninsular Tayabas, Ambos Camarines, Albay	
Batak	Coast villages of Babuyan, Tinitian, Malcampo, Tanabang	675
Mamanua of Surigao	Interior Surigao peninsula, northeastern Mindanao (Lake Mainit mountains of Kantilan to Tandag)	3,850
<i>Non-negroid or semi-negroid</i>		46,015
Hill people of Central Luzon	Region between Laguna de Bay and Pacific coast, eastern Rizal and Laguna, border of Rizal-Laguna with Tayabas, eastern Bulakan	4,316
Hill people of South Luzon	Tayabas (Guinayangan), Ambos Camarines (foothills between Mt. Isarog and Iriga), Partido de Lagonoy, Albay (Tiwi), northwestern Sorosogon	4,600
Hill people of Samar (nothing definite)	Mountains of central Samar	1,420
Hill people of Negros	Mountains and of valley central portion of Negros Island: southwest of Escalante to north of Kanlaon volcano; Himamaylan; Llanuras de Tablas	19,258
Hill people of Panay	Whole mountain region of the island: Antique (3,321), Capiz (6,313), Iloilo (6,787)	16,421
<i>Total</i>		81,941

**Table A2. The Pygmy Type According to Beyer (1921)**

PYGMY	LOCATIONS	TYPE
Apayao Swamp Region	Eastern and northern portions of Apayao, Western border of Cagayan	Australoid-Ainu
Ilokos Mountains	Ilokos Norte and northern Abra	Very little information available; Negritos mixed with Indonesian Apayaos
Zambales Mountains	Zambales, Bataan, western Pampanga, western Tarlac, Southwestern Pangasinan	True negrito with intermixture of the Austroloi-Ainu and Proto Malay (South group); mixture with Indonesian Sambals (North group)
East Luzon Mountains	The mountain ranges of eastern Luzon: Cape Engaño to Lucena (Cape Engaño, Palanan, Kasiguran, Baler, Pacific side of Southern Tayabas, Polilio Island, Alabat Island, near Baggao); eastern parts of Cagayan, Isabela, Nueva Vizcaya, Nueva Ecija, Bulakan, Rizal, Laguna, western part of Tayabas	Papuan in type; scattered small bands of mixed negrito and Proto-Malay; mixed pygmy and Indonesian (Diango)
Southern Luzon	Mountain region of peninsular Tayabas, Ambos Camarines, Albay	Some pure negritos; Proto-Malay mixture; Paluan type in pure form also occurs
Bisayan Islands	Panay, Negros, Mindoro and Palawan; smaller groups in Tablas, Sibuyan, and Guimaras	Negrito or mixed negrito (negroid); Proto-Malay (mongoloid)
Mamanua of Surigao	Surigao peninsula, north and west of Mount Apo	True negrito (Mamanua); not certain whether true negrito or Papuan Proto-Malay (Manguangan)

## **Editorial decision sent by the guest editor Phillip Endicott to Dr. Sabino Padilla**

### **Re: Abe Padilla: Anthropology and GIS: Temporal and Spatial Distribution of the Philippine Negrito Groups**

Dear Dr. Padilla,

This paper has some excellent content on the history of negrito populations as well as providing a much-needed GIS approach to their geographical location in the Philippines through time. The impact of the manuscript would benefit from a slight re-organisation of the content and additional emphasis on the important contribution that GIS can make to the study of negrito hypothesis. In particular, there needs to be a clearly defined “Introduction,” which should be separate from the literature review on the mapping and anthropology of the Philippines; the latter could be regarded as a “Background” section. The Introduction should include something on how this paper will build on the work of the past and use it to transform geographical location data into a powerful new tool. It is also where a wider regional setting for the negritos should be placed, whose focus should be mainly on the Philippines. I was though fascinated by the referral to similar phenotypes in the Malaccas, which has echoes in other early literature including Wallace, and this part might be useful in the Introduction.

The “Background” section would profit from becoming a little more succinct, giving more emphasis to those particular historical studies to be used in the GIS approach. Perhaps some of the earliest accounts could then be used in the Introduction. The GIS methods section can become the “Materials and Methods” section followed by “Results and Discussion.” Whether there needs to be a separate “Conclusion” I would leave up to you, but I’m sure that once the Discussion is seen in relation to the maps then the impact of the work will become more apparent. Nevertheless, there is a need to emphasize the findings of the comparative exercise and revisit the aims of the Introduction regarding the potential for GIS studies to be applied to many different disciplines.

The problem of definition and the term negrito is rightfully acknowledged by the author, and is central to the concept of this double-issue overall. So, it would be unfair to expect this study to resolve it, but there is a need to examine the issue of definition in more detail and with more clarity, simply because each different mapping of peoples is contingent upon the definition of negritos. However, this shouldn’t be so difficult because the people making the earlier studies presumably do have working definitions, as does the author and the Census of the Philippines. But it is important to be explicit about whether changing definitions through time—both self-definition and observer-imposed—have resulted in changes of numbers and locations of negritos. The author should be clear whether groups are defined by language, subsistence base, phenotype, or combinations of these factors. In this

respect, reference to the Reid paper in this volume will be useful and I enclose a copy of the final version. In your paper we learn that the 2000 census records a list of negrito languages. It would be interesting to know how these are defined and do they differ from Reid's outline in his paper (Reid this issue)?

The themes developed throughout on self-definition, observer-imposed definition and a pejorative polarised definition of "otherness," are excellent insights into the subject of ethnicity. The terms "monteses" and "remontados" need a little more clarification though, as this is a very interesting insight into the colonial administration's classification categories. On my first reading of the manuscript it's not clear how negritos differ from Indios, Monteses, and Remontados. Early in the paper the Moro and Infeles are mentioned but who are these peoples? Later, the term "Raza" appears but it would benefit from explanation.

On page 7 the 1903 census is said to describe sixteen wild populations including the negritos and eight civilised groups. So are there "wild" non-negritos (i.e., a phenotypical definition of negritos) and are there "civilised" negritos? If not, then does wild = negrito? And if so, is the term "wild" predicated upon being independent to state and religion, and to what extent is this definition contiguous with that of a mobile resource procurement strategy? If the working definition is based mainly on the subsistence strategy, and related mostly to the procurement of forest products—which is fairly common with surviving hunter-gatherers in South and Southeast Asia—then one might indeed anticipate an ongoing relationship between the distribution of peoples and encroachment on the negrito habitat as mentioned later on. But this may also be about lifestyle choice and a determination to remain outside the mainstream society. If so, this may form part of a self-definition of ethnicity, in contrast to other modes of subsistence. In this respect, the paper by Lye on hunter-gatherers of Malayasia makes some similar points (Lye this issue).

I recognise that this whole issue of definition is a very difficult area to navigate, particularly through time. In a venture such as GIS, however, it seems to me imperative to try and find a working definition and use it consistently. There has always been a history of defining people by visual appearances, but also with regard to their subsistence base and with regard to their position inside, or outside, of the dominant culture. To refer to "negrito" languages presupposes a definition in existence in the 2000 census and this could be explored early on and related to previous studies. There isn't a need to rewrite the anthropology of ethnicity but there is a need be clearer about the terms being used and to what extent they are consistent diachronically.

Overall, this paper will be an excellent contribution to the field of anthropology in general and to that of the Philippines in particular. At the moment I would encourage the reorganisation and emphasis of the excellent content already presented.

Yours sincerely,  
PHILLIP ENDICOTT, D.PHIL. (OXON)  
*Paris, February 14, 2013*

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