
Encyclopedia of
POPULATION

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VOLUME

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GEOFFREY G. POPE

AUSTRALIA AND THE PACIFIC

Although hominids have been present on Sunda, the continental shelf of what are now islands in Southeast Asia, for more than 800,000 years, they appear to have been unable to regularly cross water barriers. *Homo erectus* traversed small ocean gaps to reach Flores in Indonesia, but was absent from islands further east. Consequently Australia and the Pacific islands were first colonized by modern humans. This observation has often been used as a measurement of the greater organizational capacity of *Homo sapiens* during the last 40,000 to 60,000 years, perhaps reflecting enhanced language abilities. Populating the Pacific required human groups to have adequate seacraft, but more importantly to have the means of storing and transmitting information about new environments. In each part of the Australian-Pacific region the first evidence of human occupation not only implies extensive seafaring skills but also includes the archaeological residues of complex social behavior: art and ornaments, burials, and well-organized settlement structures.

Exploration of the Australian continent and Pacific islands was a prolonged process, taking many millennia to complete. The colonizing process began in the west, and terminated in the remote eastern and southern Pacific Ocean. Australia is the landmass in the region with the earliest dates for human occupation.

Australia

Homo sapiens colonized the Australian continent more than 40,000 years ago, although there is extensive debate as to whether humans arrived as early as about 55,000 to 60,000 years before the present (abbreviated B.P.), or as late as 40,000 to 45,000 B.P. This debate hinges on different opinions as to the ve-

racity of alternative dating techniques, as well as uncertainty about the extent of disturbance processes in early archaeological sites. Claims for occupation substantially earlier than 60,000 B.P. have been shown to be spurious. The uncertainty about the date of colonization makes reconstructions of the first settlement systems tenuous. For instance, if colonization took place prior to 40,000 B.P., so few sites are known that discussions of settlement are insubstantial. Furthermore, dating uncertainties make it impossible to evaluate the actual rate of colonization within Australia.

Some scholars have suggested that early settlement may have focused on coastal resources, but this seems unlikely in view of the growing evidence of occupation in arid and semi-arid inland landscapes. Lake Mungo is the most famous example of inland occupation, but hundreds of sites now reveal Pleistocene-era occupation, more than 10,000 years old, in a diverse range of inland landscapes. It is clear that people at least occasionally occupied many environments within Australia, and it is thought that population densities were higher in the zones of higher rainfall around the periphery of the continent. Early models of population change hypothesized fixed patterns of settlement during the Pleistocene, such as continuously low or high numbers of people in the arid core of Australia. These models have more recently been replaced by an image of fluctuating population in response to changing resource availability and discontinuous settlement in at least some landscapes. This is most dramatically illustrated in the glacial uplands of Tasmania, where humans abandoned the region permanently in the terminal Pleistocene, and in some arid landscapes, where some regions were abandoned during the glacial maximum, 14-18,000 B.P., while in other regions with favorable resource bases occupation continued throughout the glacial maximum.

During the late Holocene period (3000 B.P. to present), a larger number of archaeological sites were occupied in many regions of Australia, coastal and inland, islands and mainland. There was also an increase in the number of sites and the number of artifacts in many of those sites. Many archaeologists have interpreted this pattern as a reflection of population increase during the later prehistoric period in Australia. However, the magnitude of any population change has been difficult to evaluate. Calculations of the annual increase in site numbers and the rate of artifact discard show that both measures, in

all regions, were well below 0.1 percent per year. It is feasible that this might be the approximate rate of population change, in which case the scale of change would be something like a tripling or quadrupling of population between 4000 and 1000 B.P.. The absolute size of the population during this period cannot be calculated.

Increases of population may have been greater in some regions than in others. For example, in the southeast (particularly in the densely populated Murray River Valley), high levels of anemia, parasitism, and infectious diseases have been inferred from skeletal markers, and perhaps indicate higher densities of people in these lands. This conclusion is consistent with the discovery of many densely-packed cemeteries in this region. Some researchers have therefore suggested that the river valleys of the southeast were more densely populated, but if so these regions also show the same archaeological evidence for increased site and artifact abundance.

If these archaeological patterns indicate minor but sustained population growth, the causes are unclear since this period was one of drier and variable climatic conditions. Some researchers have suggested that intensification of production driven by social competition led to population increase, but there is little support for this theory in the archaeological evidence. However, the cause of population change in this period need not be a dramatic process, since the growth rate discussed here would represent a minor departure from a long-term balance between births and deaths. Moreover, a number of archaeologists have cautioned that the change in the quantities of archaeological material (numbers of sites and artifacts) is probably not a reliable indicator of the magnitude of population change. The quantity of archaeological material preserved from any period is a reflection of many factors in addition to group size, including the destruction of sites and the wastefulness of the production system creating artifacts. Such factors would have exaggerated the observable abundance of material in the recent past. Consequently, while many archaeologists have concluded there were population increases in the late Holocene, the nature and size of those changes remains poorly defined.

Melanesia

Melanesia is that area of the western Pacific that includes New Guinea and a series of large and small

islands stretching eastward. Lower sea levels during the Pleistocene meant that New Guinea was connected to northern Australia by an exposed portion of the shared continental shelf, and it is not surprising that the human occupation of New Guinea is thought to be of comparable antiquity to that of Australia. Archaeologists have dated the subsequent colonization of the islands to the east of New Guinea to more than 35,000 years ago, based on a series of archaeological sites in New Britain and New Ireland such as Buang Merabak, Yombon, and Matenkup-kum. By about 30,000 B.P. people had reached the Solomon Islands, but here the colonization process halted for 25,000 years. This distribution of archaeological sites in Pleistocene Melanesia is limited to those islands separated by a water barrier of less than 250 kilometers, a distance that perhaps indicates the limits of the maritime journeys of the day. However, within the colonized zone of Melanesia there appears to have been considerable maritime interaction, including possible trade, which implies that longer oceanic journeys may not have been impossible. For whatever reason, more isolated islands were not colonized until much later, with the spread of people archaeologists call *Lapita*.

Lapita is a distinctive archaeological complex, marked in many sites by elaborate dentate stamped pottery, and by diverse economic practices including but not limited to the use of domesticated plants (yams, taro, banana, etc.) and animals (chicken, pig, dog). This archaeological material first appears in the Bismarck archipelago, east of New Guinea, about 3500 B.P. and spreads eastward throughout Melanesia within a short time. The proliferation of the Lapita Complex is likely to have involved not only the colonization of distant islands of Melanesia but also a region-wide increase in population.

Late Holocene increases in population size in many parts of Melanesia are often thought to reflect the introduction of agriculture that accompanied Lapita. However, the late Holocene population changes in Australia, where agriculture was never established, and the obvious late Holocene growth of populations on Polynesian islands, where agricultural abilities were known to the founding groups, represent parallel demographic trends. These similarities are as yet unexplained but imply processes other than or additional to the introduction of agriculture.

Polynesia

Polynesia is the vast expanse of the central Pacific Ocean covering nearly 30 million square kilometers. Within this area are a number of island groups, from Samoa and Tonga in the west to the Hawaiian Islands in the north, Easter Island in the east, and New Zealand in the southwest. The spread of people across this vast region appears to have taken place in a number of stages. Excavations on many islands suggest humans moved from the Samoa and Tonga island groups eastward into the central Polynesian region about 2200 years ago. After building an economic and demographic base in the Marquesas and Society Islands, people migrated northward to Hawaii and further east to Easter Island approximately 1500 to 1700 years ago. Still later, only within the last 800 years, another migration to the south produced the colonization of New Zealand. These movements of people were sometimes single, one-way voyages, but there is also evidence of return voyaging and secondary migrations, making the colonization process a complex one.

Population change in the Pacific islands has been measured by charting alterations in the abundance of dated habitation sites. For example, on a number of the Hawaiian Islands analysis of this archaeological evidence reveals an S-shaped population curve: there were few habitation sites dated to the period prior to 800 B.P. (1200 C.E.), then a tenfold increase in habitations during the period from 800 to 400 B.P. (1200–1600 C.E.), followed by a stabilizing or even decline in their number. The period of rapid increase is thought to have been caused by the development of intensive forms of food production such as irrigated field systems and fishponds. The cessation of population growth may have been a result of limits to agricultural intensification in some regions and of European contact and diseases. Population growth in the Hawaiian Islands is also entangled with sociopolitical change. In Hawaii's hierarchical political structure, the increased pools of labor could be directed by chiefs to create large-scale infrastructure projects that increased resources for the expanding population. As this process continued, the distinctions of rank and power became exaggerated. Warfare appears to have increased in frequency and severity as struggles over power and resources became more intense. This pattern of increasing warfare, sometimes accompanied by declining populations as human-induced environmental changes occurred, is a common one.

European Contact

In many areas of the Pacific and Australia, the introduction of diseases such as smallpox at the time of European contact led to marked reduction of population and subsequent reorganization of social, political, and economic practices. For this reason it is accepted that many historical observations of population density are poor indicators of pre-contact demographic conditions. It is likely that population densities in Australia and the Pacific during the late Holocene were substantially higher than observed historically, a pattern that matches well with archaeological evidence.

See also: *Archaeogenetics; Hunter-Gatherers; Paleodemography; World Population Growth.*

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EUROPE

Europe was the last continent of the Old World to be inhabited by modern humans, but the demographic prehistory of Europe is as long, as rich, and a lot better known than that of any other continent. In spite of the short history of human occupation in Europe, some of the most important evolutionary demographic events took place there.

The First Europeans

About 1.7 million years before present (B.P.), *Homo ergaster*, the earliest hominid species known in Eu-