

Cambridge University Press

978-1-107-06982-4 - Demography and Evolutionary Ecology of Hadza Hunter-Gatherers

Nicholas Blurton Jones

Excerpt

[More information](#)

Part I

Demography

Cambridge University Press

978-1-107-06982-4 - Demography and Evolutionary Ecology of Hadza Hunter-Gatherers

Nicholas Blurton Jones

Excerpt

[More information](#)

1 Introduction

There are about a thousand people whose first language is Hadzane. At the time of my research between 1985 and 2000, most of them lived, hunted, and gathered plant foods in rocky hills in the eastern rift valley near Lake Eyasi in northern Tanzania. They call themselves Hadza, or Hadzabe (plural), or to a Kiswahili speaker, Wahadzabe, adding the Kiswahili plural animate noun prefix. They can be roughly divided into eastern and western sub-populations.

Hadza live in spectacular country. Many eastern Hadza camps are within sight of the outer wall of Ngorongoro crater, a UNESCO World Heritage Site, and many others are just across the rift valley from the equally well-known Serengeti National Park, Olduvai gorge, and Laetoli of fossil footprint fame (Photograph 1.1). Western Hadza lived adjacent to high-priced safari country around Maswa, south of Serengeti. James Woodburn, the first serious anthropologist to write about the Hadza in English (based initially on his intensive fieldwork in 1959–1961) (Woodburn, 1964) has reported on many aspects of Hadza life, and since 1988, our research group has added publications on behavioral ecology and life history. Now Frank Marlowe (2010) has collected his and other's recent research to give an excellent description of Hadza life. My aim here is more specialized. First, I want to set a detailed study of Hadza demography alongside the classic works on hunter-gatherer demography by Howell (1979) and Hill and Hurtado (1996) and other recent accounts such as those of Early and Headland (1998). Second, I want to use individual variation within the whole population to pursue some of our long-standing questions about how individuals, hunting and gathering in a sub-Saharan savanna environment, promote their reproductive success (RS). This should be useful to anyone interested in the evolution of our species.

From some hillside Hadza camps, one would be able to see, with a strongly wind-stabilized telescope, the tourist buses climbing the outer flank of Ngorongoro crater. Yet the majority of Hadza live by an economy as far removed from that of the tourists, and of most other Tanzanian citizens, as it is possible to get. Despite brief experiences with other lifestyles, most Hadza acquired the bulk of their food by hunting wild animals and gathering wild plants. When my colleagues Hawkes and O'Connell weighed and recorded all the food coming into Hadza camps in their 1985–1986 year in the field, they found that only 5% of the calories came from agricultural sources, traded from farmers. Ten years later in 1995–1996, when my student Frank Marlowe spent a year collecting similar data in a much wider array of Hadza camps, some very near non-Hadza villages and including camps routinely

Cambridge University Press

978-1-107-06982-4 - Demography and Evolutionary Ecology of Hadza Hunter-Gatherers

Nicholas Blurton Jones

Excerpt

[More information](#)

4 Introduction



Photograph 1.1 View from Kidelu mountains across the lakeshore plain and Lake Eyasi to the western rift wall, beyond which lies Maswa game controlled area, Serengeti, and Laetoli. © James F. O'Connell, 2015. Reproduced with permission.

visited by tourists, he obtained a very similar result (6.6%; Marlowe, 2010, p. 126). The Hadza say they have always hunted and gathered, and often say that they wish to do so for ever. When the context arises, they explain to other Tanzanians that the bush is clean, peaceful, and safe, and that unlike farmers, they like to eat meat and the bush provides enough, even though their hunting is conducted only by traditional bow and arrow.

In 1911, Erich Obst, a German geographer, visited the Hadza and they told him that they had always lived there and always hunted and gathered. All were living this way during his time with them, but he wondered whether it was true that they always had. He discussed evidence such as whether Hadzane words for domestic animals were borrowed or not (they are borrowed but unlike his contemporary, the army doctor Dempwolff, Obst did not know enough of the languages of neighboring tribes to learn this). Obst also left one field site because there was “too much influence from Isanzu” and many “indistinct types.” We must address similar issues of Hadza history and identity. Although we have yet to hear a Hadza express any doubt about his identity as a Hadza, we must ask ourselves who is a Hadza and who is not? Are they a sufficiently distinct and limited population to be the subject of a demographic study, or should we instead study the demography of an area such as an administrative or geographical district? Shall we identify people by their language, the identity that they and others attribute to them, their economy, or their location? Especially important for our demographic interest: does the population recruit and lose people only by birth and death, or also by migration and changes in ethnic identity? Are the Hadza a closed biological population that we could describe with stable population

models, in which birth and death predominate massively over migration and change in ethnic identity, or could they be, as Cooper (1949) had suggested, a floating population of dropouts and tax evaders from the surrounding populations? We also need to set the Hadza in their contemporary and historical contexts and describe more about the land they inhabit. Will our results reflect the demography of a forager lifestyle, or of some mixture of lifestyles, mixed both over time and across different locations?

Alongside their persistence as hunter-gatherers in the populous twentieth century, probably the most remarkable thing about the Hadza is their language. Some have related Hadzane to the southern African Khoisan languages, because it includes some of the click consonants found in those languages. However, the distinguished South African linguist Dorothea Bleek, after her several months with the Hadza in 1930, apparently could add little more than the existence of gender in the language to the clicks as links to the southern African languages. Recently, in a much more intensive study, Sands (Sands *et al.*, 1993; Sands, 1995) has shown that links to Khoisan are minimal. Even if links are eventually established, they will be remote. Three major language families are represented by the surrounding farming and herding neighbors of the Hadza: Iraqw (Cushitic, Afro-Asiatic), Isanzu and Sukuma (Bantu, Niger-Kordofanian), Datoga and Maasai (Nilotic, Nilo-Saharan). Hadzane belongs to none of these families and must be regarded as an isolate. It must have remained distinct from all the modern languages of Africa for many hundreds of years, an extraordinary feat of cultural survival. Even more remarkable are the results of genetic surveys by Sarah Tishkoff, Joanna Mountain, and colleagues (Scheinfeldt *et al.*, 2010). The Hadza are genetically extremely distant from southern African Khoisan speakers, and from others, even the nearby Sandawe. All three, the Hadza, Sandawe, and Khoisan, along with Pygmies, emerge as the most deep-rooted populations, and distinct from the Bantu, Nilotic, and Cushitic-speaking majority.

Mountain and colleagues (Knight *et al.*, 2003) argued that the most parsimonious claim is that the click consonants existed in humanity's first languages and were lost by all but Khoisan, Hadzane, and Sandawe. Alternative explanations were quickly offered, mainly emphasizing the ease of borrowings between languages, but the very great antiquity of the Hadza coalescence with the other persisting hunter-gatherer populations is undoubtedly another of their claims to distinction (Wells, 2006, p. 133).

While Hadza talk as if they had their land to themselves until quite recently, this may not be entirely true. Evidence such as the existence of stone irrigation channels at Endamagha at the north end of present-day Hadza country suggests the presence of farmers in the area around 1700 (Sutton, 1986), and farmers are there again today where irrigation is possible at the foot of the surrounding mountains. Herders have left archaeological traces in the area on and off during the last thousand or so years (Mabulla, 2007). Mabulla's review of the archaeology of the Eyasi basin indicates traces of hunters and gatherers in the Eyasi basin since 130,000 years ago. Much of the time, both prey and plant foods included species eaten by Hadza today.

6 Introduction

The Hadza have been subjected to the curiosity of many researchers since Obst, yet they have not taken their place in the popular imagination nor in the anthropological literature in the same way as the !Kung and other Khoisan hunter-gatherers, or the Efe, Baka, or other “Pygmy” groups, or any of the Australian aboriginal cultures. The Hadza have remained little known outside the small band of anthropologists who specialize in hunters and gatherers, and for many years most Hadza have liked it that way. Today, the more worldly among them recognize that being better known by anthropologists and tourists may give them some protection from losing their land and their identity. This view coincides conveniently with the anthropologist’s wish to learn as much as possible about their economy before it is lost.

To some extent, the Hadza remained little known because most of the early visitors wrote only in German, including Ludwig Kohl-Larsen who spent substantial amounts of time with the Hadza in the ill-fated 1930s and wrote several books about them. Recently his films were rediscovered, and stripped of the propaganda of their terrible era, formed the basis of a pair of TV films made for SWR by Annette Wagner. Showing Kohl-Larsen’s films and photographs to contemporary Hadza, including children and grandchildren of individuals featured in the films, was both riotously enjoyable, and enormously helpful for our age estimations. Similarly important for age estimation were genealogies in Dorothea Bleek’s notebooks and her photographs from 1930, kindly provided by the Cape Town University Archive. An excellent film was made by James Woodburn in 1970, and it is Woodburn who has brought the Hadza to the attention of English-speaking anthropologists, especially with his two very valuable papers in the “Man the Hunter” symposium (Lee and DeVore, 1968), and a number of later landmark papers. Woodburn has continued to visit and write on the Hadza constantly since his original 1959–1961 fieldwork. Woodburn also shepherded a group of biological anthropologists led by Nigel Barnicot in a set of studies as part of the International Biological Program (IBP) in 1966–1967. Their papers, which include Dyson’s demographic analysis, Hiernaux and Hartono on anthropometry, Bennett and others on diseases, injuries, age pattern of blood pressure and cholesterol levels, form an important basic knowledge of Hadza biology. Although I and my colleagues come from theoretical perspectives very different from Woodburn’s, we find ourselves almost always in agreement with Woodburn’s descriptions and insights about the Hadza.

In the early 1980s, I began to look around for a hunter-gatherer population where we might be able to study human biology and behavior from an adaptationist perspective. I was particularly interested in seeing whether it was possible to replicate the work I had done with Richard Sibly on birth spacing using Richard Lee’s ecological data (Blurton Jones and Sibly, 1978), and Nancy Howell’s demographic data on the !Kung (Blurton Jones, 1986, 1987). I tracked down Lars Smith, who had gone as a student of Irv DeVore to do fieldwork among the Hadza in the 1970s. After an excellent start and the acquisition of much knowledge about how to work among the Hadza, Lars had settled in East Africa. Lars agreed to help me come on a pilot visit in 1982 and assess the situation. The political and logistic situation could not have been worse, but the field situation was perfect. At that time, the Hadza were

very much left to get on with their lives unimpeded. I began my East Africa fieldwork apprenticeship under Lars' expert guidance. Lars again guided me, Hawkes, and O'Connell in our 1984 pilot visit, and then in 1985 Lars and I completed the first of the series of censuses on which this book is based. All of the subsequent, Utah-UCLA and Marlowe group fieldwork owes its existence to Lars' skill at negotiating the Tanzania of the early 1980s.

At about this time, another initiative in the adaptationist perspective had been that of Kristen Hawkes on optimal foraging among the Ache with her then students Kim Hill, Hillard Kaplan, and Magdalena Hurtado, and by Hawkes and her colleague James O'Connell on hunting and use of space by Australian aboriginal people. It was natural that we should collaborate and after a pilot visit to the Hadza, Hawkes, O'Connell, and I quickly formed a team to collaborate on such investigations among the Hadza. Hawkes and O'Connell have published a number of papers on women's work, grandmothers as helpers, meat distribution, and the economic puzzle of big game hunting, spatial distribution of objects, bone transport, economics of scavenging, and so on. I collaborated in gathering some of the data for these projects. For example, large game are caught rather seldom, so anyone who was in the field collected the data on bone transport and meat distribution and we pooled these data. I have written on children's foraging, and development of foraging skills (with Frank Marlowe), marriage and divorce, residence patterns of grandmothers and grandfathers, as well as two papers on the early stages of our demographic research. The demographic research has continued slowly for the entire duration of our project. There are several reasons for the lack of speed. Most important is that demographic research among very mobile hunters and gatherers simply takes a long time. Nancy Howell recently commented that finally there is someone who knows why she took so long to publish her !Kung demography (Howell, 1979). I am consoled to think that, reciprocally, there is someone who may understand why it has taken me so long to publish this account of Hadza demography.

The first aim of the demographic study was to complete as thorough and accurate an account as possible of the demography of another hunter-gatherer population to set alongside the excellent studies of the !Kung by Howell (1979) and of the Ache by Hill and Hurtado (1996). This is a straightforward descriptive goal. Straightforward but not easy, for the Hadza are far from the ideal demographic subjects. They move every few weeks, change their names more than once in their lifetime, can be referred to differently by father and by mother. Although they were quick to appreciate that we wanted to learn everything we could about their ability to live in the bush, they were very unfamiliar with the idea of being interviewed out of harmless curiosity. Hence, my first demographic goal was merely to establish how many babies they had, at what ages they had them, at what ages people died – in other words, to estimate age-specific fertility and mortality. Along with this came other descriptive measures, the crude death rate and birth rate, age structure, and so on. In this kind of small, mobile, and non-literate population, these simple descriptive tasks are not so simple. One of the most difficult tasks is to find out how many Hadza there are, and it is especially important to try to make some estimates of the accuracy

8 Introduction

or error in our estimates of Hadza demographic parameters. I have addressed the issue of uncertainty and error as intensively as I can. Partly, I do this by generous use of resampling methods. I have also tried to fully exploit the interdependence of demographic measures collected by different, independent observations.

The demographic results bring back to mind some long-standing questions about hunter-gatherers. What, if anything, regulates their population? Because, as some of the contributors to the “Man the Hunter” symposium (Lee and DeVore, 1968) recognized, evolution has long pushed individuals to maximize their RS, it is unlikely that any “self-sacrificing” mechanism exists that closely regulates the population. However, it could be that the members of a population are all affected by density dependent factors, or instead by less predictable random fluctuations in the environment. In common with other modern hunter-gatherers, the Hadza have been increasing quite fast. The data suggest their population has been “stable” (fertility and mortality remaining constant) but far from “stationary” (total numbers neither increasing nor decreasing). At these rates of increase, hunter-gatherers could have filled the world many times over in as little as a few thousand years. Yet they clearly did not. Like Hassan (1975), Hill and Hurtado (1996) discussed this contradiction, pointing out that it would take mortality levels higher than any ever observed to keep forager populations stationary. We can think about and model some of the possibilities, past and present.

The second general aim is to use individual variation in a population-sized sample to illuminate some of our adaptationist questions. Thus, in Part II of this book I turn my attention to those selection pressures that probably always stood in the way of population “restraint.” Besides my original interest in whether there is an optimal inter-birth interval and whether, as expected from the richer ecology, it is shorter than among the !Kung, we should be able to use our larger sample to test ideas about paternal investment and monogamy (amplifying and checking tests made for Blurton Jones *et al.*, 2000), the role of hunting in men’s reproductive strategies, grandmothers as helpers, and so on. As Hill and Hurtado (1996) pointed out, helpers are an especially important topic for adaptationists who would use observed populations to test their ideas. Helpers could “dampen out” many important trade-offs.

Traditionally, anthropologists have taken the view that hunter-gatherers give us a special view on human evolution. Contemporary hunter-gatherers are widely accepted as one of four windows into the past: fossils and archaeology, contemporary primates, contemporary and recent hunter-gatherers, and quantitative molecular genetics, the newest and very important fourth window. As forager occupants of relatively rich sub-Saharan wooded savanna, the Hadza would seem to have as good a claim as any to the attention of anthropologists who are interested in the role of that ecology in the evolution of our species. However, we need to get more analytical about this belief. Often we work at our projects without much thought to exactly why we think hunter-gatherers are so informative, concentrating instead on the precision and detail of our studies; but there are pitfalls, criticisms, doubts, and questions about the contribution of hunter-gatherer studies, and we cannot avoid them indefinitely. It is my impression that researchers’ intuitive feel of the way to work is usually good,

Cambridge University Press

978-1-107-06982-4 - Demography and Evolutionary Ecology of Hadza Hunter-Gatherers

Nicholas Blurton Jones

Excerpt

[More information](#)

and usually well ahead of their explicit rationale. Nonetheless, only careful analysis of what we are trying to say, and whether it is justified, can test this impression. Analytic guides include Foley (1996), Smith *et al.* (2001), and Bird and O'Connell (2006).

Reflecting my two basic aims, this book is organized in two parts. The first reports our methods and findings on basic demography. The second reports our more unusual and interesting questions about behavioral ecology. However, first I need to give more background information about the Hadza and their home. The photographs provide an introduction to both. Jim O'Connell's photographs excellently illustrate Hadza life and economy as we observed it between 1985 and 1990. I have selected pictures that introduce features of Hadza economy that we regard as the essential bases of their lives. A quick skim through the pictures and their legends may serve as an alternative orientation to the questions addressed in the book and the contexts in which they arise.

2 Geography and ecology in the Eyasi basin

Natural grasslands do occur in East Africa, but only in areas of unusual edaphic conditions.

A. Joy Belsky, 1990

Hadza live in spectacular and varied country. Rocky hills with wooded savanna are their most common residence; forest-capped mountains, the expanse of the lake, and the rift escarpments are their daily view. For the Hadza researcher, it is a relief to see the popular contrast of forest and plains corrected by Belsky among others. But let's begin at the beginning. The rift dominates the scenery, influences the climate and the soil, generates the water supply, and ultimately determines the population densities and economic activities of the region around Lake Eyasi. In this chapter, I aim to describe the climatic, floral, and faunal environment in which we observed the Hadza, suggest some implications, and align the current conditions with what we can determine about the historical and prehistoric conditions. The recent tome by Spinage (2012) has been a valuable backup to my own literature searches.

Most of the eastern Hadza live in a roughly rectangular area south and east of Lake Eyasi in the bottom of the rift valley, southwest of Ngorongoro crater. The area measures just 90 km × 40 km (3600 km²) (55 miles × 25 miles), a little larger than the Los Angeles basin, or Long Island New York, and about the size of a middling English county. Figure 2.1 shows the general features of the area around Lake Eyasi. The map marks non-Hadza villages mentioned in the text, and shows the general areas inhabited by Hadzane speakers. Figure 2.2 shows the location of Hadza camps that we visited between 1985 and 2000. One of the most striking features is the proximity to Ngorongoro crater, Laetoli, Olduvai, and Serengeti. The main tourist road passes a mere 25 km from the northernmost Hadza camps, but the Hadza are separated from this road by 500–1000 m (1600–3300 ft) in altitude, and more important differences in habitat. The area where most eastern Hadza live had remained very sparsely populated and little visited until the final 20 years of the twentieth century. Three reasons stand out: (1) The main travel routes have followed the well-watered highlands and avoided the much drier lowlands next to Lake Eyasi. (2) The basin has very low rainfall; agriculture is only sustainable where irrigation is possible, using water from the highlands. (3) The tsetse fly was abundant, and a strong disincentive to herders.

Describing the ecology and climate is a natural preliminary to writing about any population, but there are some specific purposes to such a description. What sort of history of droughts, shortages, even famines, seems likely? Have game animals