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ACORNUUTOPIA? DETERMINING THE ROLE OF ACORNS IN PAST HUMAN SUBSISTENCE

Sarah Mason

**Acorns: food for
gods, pigs or
people?**

Classical mythology and the writings of poets through the ages have often assigned the acorn a role as one of the principal foods on which people subsisted during a past 'Golden Age', when heroes and gods walked the earth, food was abundant, and there was no need for the hard labour associated with farming (see e.g. Graves 1960; Graves 1961; Hulme 1907; Loewenfeld 1957). Some have inferred that such writings represent the remnant of a folk memory from the hunter-gatherer past, and have suggested that acorns formed an important, perhaps the major, element of diet in pre-agrarian western Eurasia (Clark 1952; Frazer 1929, vol. 2, 259; Howes 1948; Loewenfeld 1957; Smith 1929; Soyer 1853). As yet, however, there is little evidence for such a hypothesis. During Classical times, and in later periods up to the present century, there are numerous documentary reports of the use of acorns as food by agrarian peoples throughout the Mediterranean basin and adjacent areas of Europe, South-West Asia and North Africa (see Mason 1992, chapter 3).

To what extent written accounts present an acorn acorns in western Eurasia during Classical and important question for those interested in past Acorns are nutritionally similar to the cereals, carbohydrate, though some are closer to other notable quantities of fats (Mason 1992, chapter 6 therefore have the potential to occupy the same cereals, and are known to have been an important in other parts of the world, including California and Japan. It is interesting in this context to note of Roman mythology, better known for introduced said to have been the first to replace their origin with the acorn (Ovid *Fast* 4.399, trans. Frazer Romans certainly recognised the nutritional value idoros 2.25, trans. White 1975; Borgeaud 1988 cultivated, and sweet and bitter types were known into *Plants* 3.8, trans. Hort 1916). The productivity compared favourably with that of cereals. The south-western Spain has been estimated at 5-70 al. 1967; Parsons 1962), in comparison with estir productivity, under traditional Mediterranean syha (Sallares 1991, 389).

Nevertheless, many of those writing, both in an about western Eurasian acorn use have character only for animals, something which people would hardship or famine, or as a food of those living was difficult (Borgeaud 1988, 14; Mason 199 reports of acorn-eating often refer to people Strabo, for instance, reported that in mountain lived on acorn bread for much of the year (Str Jones 1923); and the mountainous district of Ar considered by the Greeks as a barbaric region persisted (Borgeaud 1988; Tripp 1970, 69), an acorn-eating (Frazer 1913; Herodotos 1.66, trans 8.4, trans. Jones 1933). As Arkadia also eventually

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was abundant, and there was no need for the hard
farming (see e.g. Graves 1960; Graves 1961; Hulme
1971). Some have inferred that such writings represent
memory from the hunter-gatherer past, and have
formed an important, perhaps the major, element of
the diet of prehistoric man (see e.g. Clark 1952; Frazer 1929, vol. 2, 259;
Held 1957; Smith 1929; Soyer 1853). As yet, however,
there is no direct evidence for such a hypothesis. During Classical times, and
the present century, there are numerous documents
of acorns as food by agrarian peoples throughout the
eastern and adjacent areas of Europe, South-West Asia and
China (see e.g. Frazer 1929, chapter 3).

To what extent written accounts present an accurate picture of the role of
acorns in western Eurasia during Classical and pre-Classical times is an
important question for those interested in past diet and subsistence.
Acorns are nutritionally similar to the cereals, being largely a source of
carbohydrate, though some are closer to other nuts in containing consid-
erable quantities of fats (Mason 1992, chapter 6 and appendix 1). Acorns
therefore have the potential to occupy the same role in subsistence as
cereals, and are known to have been an important, sometimes staple, food
in other parts of the world, including California, Eastern North America
and Japan. It is interesting in this context to note that the goddess Ceres
of Roman mythology, better known for introducing cereals to mankind, is
said to have been the first to replace their original food of leaves and grass
with the acorn (Ovid *Fasts* 4.399, trans. Frazer 1929). The Greeks and
Romans certainly recognised the nutritional value of acorns (e.g. Ar-
temidoros 2.25, trans. White 1975; Borgeaud 1988, 14); and both wild and
cultivated, and sweet and bitter types were known (Theophrastus *Enquiry
into Plants* 3.8, trans. Hort 1916). The productivity of oak trees can also be
compared favourably with that of cereals. The average yield of acorns in
south-western Spain has been estimated at 5-700 kg/ha (Mazuelos *Vela et
al.* 1967; Parsons 1962), in comparison with estimates made for past cereal
productivity, under traditional Mediterranean systems of, at most, 650 kg/
ha (Sallares 1991, 389).

Nevertheless, many of those writing, both in ancient and modern times,
about western Eurasian acorn use have characterized acorns as a food fit
only for animals, something which people would resort to only in times of
hardship or famine, or as a food of those living in areas where agriculture
was difficult (Borgeaud 1988, 14; Mason 1992, 80, 83). Documentary
reports of acorn-eating often refer to people living in remote districts.
Strabo, for instance, reported that in mountainous northern Spain people
lived on acorn bread for much of the year (Strabo *Geography* 3.3.7, trans.
Jones 1923); and the mountainous district of Arkadia in the Peloponnese,
considered by the Greeks as a barbaric region where ancient customs
persisted (Borgeaud 1988; Tripp 1970, 69), is closely associated with
acorn-eating (Frazer 1913; Herodotos 1.66, trans. Godley 1946; Pausanias
8.4, trans. Jones 1933). As Arkadia also eventually became a model for the



'Golden Age' (Borgeaud 1988; Tripp 1970), our picture of the value put upon acorns as a food by the ancients is rather ambiguous.

The archaeology of acorns in western Eurasia: inadequacies and biases

Ideally archaeological, particularly archaeobotanical, evidence should be able to provide us with answers regarding the likely importance of acorns in the past. Acorns certainly are found at sites throughout Europe, the Mediterranean, and South-West Asia, dating from Mesolithic or Epipalaeolithic times to the medieval period (see Mason 1992, chapter 2; Vencl 1985). Finds date to at least 19,000 BP (17,000 BC) at the site of Ohalo II in Israel (Kislev *et al.* 1992). Acorns have been found at some of the early village sites of the Near East, including Catal Hüyük, where some were found next to a fireplace 'as if they were just being roasted' (Helbaek 1964, 122). In Greece they have been recorded from early Neolithic sites, including Achilleion and Sesklo in Thessaly (Renfrew 1966), onwards. At Bronze Age Raskopaniza in Bulgaria acorns were found mixed with Einkorn and barley grains on a saddle quern, and it has been suggested they were being ground into flour together (Renfrew 1973). Representations of acorns also occur as decorative items, e.g. as gold pendants from Gordion in Phrygia (7th/6th century BC: de Vries 1980, 164, fig. 4); as wreaths of gold acorns and oak leaves in the tombs of Vergina in Macedonia (4th century BC: Andronicus 1987, 75, 203, 214-5); and embossed on silver and gold bowls (*phialai*) from the Rogozen and Panagyurishtë treasures of Thrace (3rd/4th century BC: Cook 1989, pl. 7B; Trustees of the British Museum 1976, 75, fig. 361).

However, there are various, largely unacknowledged, problems with interpretations of the archaeological evidence of acorn use. The number of sites in the region at which systematic techniques for the recovery of archaeobotanical remains have been used is still relatively small. The most common form in which cultural food-plant remains are preserved is as charred (sometimes termed 'carbonized') seeds, fruits, or vegetative organs (roots, tubers, etc.), in whole or fragmented form, as a result of accidental over-exposure to fire in processing, preparation for storage, or cooking, or occasionally destruction of whole settlements by fire. Such charred plant remains are protected from the usual processes of decay.

Though large charred plant organs or fragments, charcoal, are relatively easily seen and can be picked up in a wide range of archaeological contexts, the use of flotation is usually the majority of charred plant remains from the surface (Mason 1992, chapter 3 and appendix 4). It has been suggested that the use of flotation is usually not affect the recovery of such large and readily recovered plant remains has not been under recovery of plant remains as long ago as the last century in size (Mason 1992, 30). Such fragmentary recovered from sites in Europe or the Near East therefore, that much of the available evidence

Where acorn remains do occur in archaeological contexts, they are often found in small quantities, and it is difficult to assume that they are evidence of use. They may be used for other parts of the oak, including the bark and contain higher concentrations of tannin, and a medicinal function, both for humans and animals (Dioscorides, for example, attributed healing properties to the bark of the oak). They may also have been used as fuel for cooking or for other purposes. Their value to pigs in particular is well known (e.g. Poulton 1992, chapter 3 and appendix 4). It has been suggested that the use of acorns for animal feed is unlikely to be recorded in archaeological contexts, since it is difficult to allow animals to forage for their own acorns (Renfrew 1973; Vencl 1985), but there is evidence from documentary sources, and from more recent

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Though large charred plant organs or fragments, like large pieces of wood charcoal, are relatively easily seen and can be picked out from archaeological contexts, the use of flotation is usually necessary to separate the majority of charred plant remains from the surrounding deposits (Greig 1989).

It might be thought that the use of flotation – which can enable recovery of seeds and other plant fragments down to a size of 250 µm or less – would not affect the recovery of such large and readily visible remains as acorns. Acorns have been found on many sites on which proper sampling and recovery of plant remains has not been undertaken, including sites in Europe excavated as long ago as the last century. However, in almost all cases only whole acorns or single cotyledons (half-kernels) have been recovered. In contrast, in Eastern North America, where acorns are often abundant on sites dating from c. 8,000 BP (c. 6,000 BC) until recent times, the vast majority of finds consist of fragments of acorn shell of 2 mm or less in size (Mason 1992, 30). Such fragmentary remains are not generally recovered from sites in Europe or the Near East, and it seems likely, therefore, that much of the available evidence has been overlooked.

Where acorn remains do occur in archaeological contexts it cannot necessarily be assumed that they are evidence of use as human food. Acorns have other potential uses. They may be used as tanning agents, though other parts of the oak, including the bark and the cupules of the acorns, contain higher concentrations of tannin, and are more often used in this context (cf. Jørgensen 1977; Mason 1992, appendix 2). They can also have a medicinal function, both for humans and animals (Mason 1992, 234). Dioskorides, for example, attributed healing properties to acorns (1.142, trans. Gunther 1934). They may also have been used as animal feed – their value to pigs in particular is well known (e.g. Parsons 1962; Smith 1929), and they are eaten by a wide range of domestic (as well as wild) animals (Mason 1992, chapter 3 and appendix 4). It has sometimes been suggested that the use of acorns for animal feed is unlikely to account for their presence in archaeological contexts, since it would involve much less effort to allow animals to forage for their own acorns (e.g. Jørgensen 1977; Renfrew 1973; Vencl 1985), but there is evidence from both ancient documentary sources, and from more recent times, that acorns may be



collected for the stall-feeding of animals. Gato describes the collection of large quantities of acorns as feed for working oxen, and their processing to remove the astringent tannins (*On Agriculture* 54.1: 60, trans. Hooper 1934). During this century acorns have been collected for sale as pig feed on a small scale in south-western Iberia (Smith 1929). In south-eastern Turkey the collection of acorns to be fed to goats, from trees coppiced for firewood in areas from which animals are excluded, has recently been observed (Mason 1992, 93).

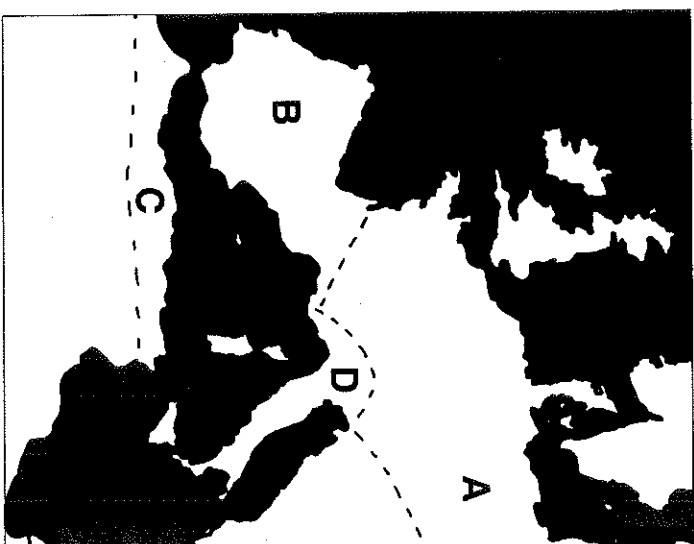
Generally in western Eurasia, it is difficult to obtain with certainty good direct evidence for the role of acorns in past human diet. Interpretations of past subsistence have consequently tended to reflect the ambiguity of documentary sources on acorn use. In addition, there is frequently a failure to take into account taphonomic, recovery and sampling biases which might affect the archaeobotanical record (Mason 1992, 45-46, 48, 189-95). Thus it has been possible for acorn-collecting to be considered a significant part of the economy during the Mesolithic at Grotta dell'Uzzo in Sicily (Lewthwaite 1986, 60), where the finds consist of only two charred acorn cotyledons, while in similar instances the paucity of finds in certain periods or areas has been interpreted to mean that acorn gathering could not have been an important part of the economy. In this author's opinion there is almost invariably, at present, insufficient direct archaeobotanical evidence to enable conclusions of this type to be drawn.

However, other types of information can aid the kinds of inferences that might be made about acorn use in the past. The most important of these are biological/ecological and ethnobotanical data.

The table on p. 18 and the map opposite give a very general picture of the present numbers and distribution of acorn species in Europe, the Mediterranean and South-West Asia. The table shows 32 species, some very widespread, and others with a much restricted distribution. In much of southern Europe and into parts of South-West Asia the number of species present is comparable with other parts of the world where acorns have been recorded ethnographically as important human food sources – e.g. California, with about 15 species, or Japan with 14. Eastern North America,

which also has good archaeobotanical evidence for species in total. In none of these regions, nor within the map overall, would all species necessarily be present together. However, in localities where several relatively close proximity this may have some significance for the regular availability of acorns. Acorn production is to year. Both individual trees and whole local production may, for reasons that are poorly understood, be producing a large crop of acorns, in what are known as mast years (Mason 1992, appendix 3). With several species present it is likely that the chance of factors adversely affecting acorn production is likely to be reduced.

Table 1 also indicates those species for which there is quantitative, on 'sweetness' or 'bitterness' of



Acorn availability and 'edibility'



| REGION | SPECIES | ENGLISH NAMES | TASTE | FOOD USE RECORDED |
|---|----------------------------------|-----------------|--------------|-------------------|
| Throughout/widespread (ABDEFG) | <i>Quercus petraea</i> | Sessile Oak | Bitter/Sweet | |
| | <i>Q. pubescens</i> | | Bitter/Sweet | • |
| Mediterranean (BCDEF) | <i>Q. robur</i> | Pedunculate Oak | Bitter/Sweet | • |
| | <i>Q. coccifera</i> | Kermes Oak | Bitter | • |
| South-west Europe (B) | <i>Q. ilex</i> | Holm Oak | Sweet/Bitter | • |
| | <i>Q. canariensis</i> | | | |
| | <i>Q. congesta</i> | | | |
| | <i>Q. faginea</i> | | | |
| | <i>Q. fruticosa</i> | | | |
| | <i>Q. mas</i> | | | |
| | <i>Q. pyrenaica</i> | | | |
| | <i>Q. rotundifolia</i> | | | |
| | <i>Q. suber</i> | Cork Oak | Sweet | • |
| | <i>Q. suber</i> | Cork Oak | Sweet | • |
| North Africa (C) | <i>Q. faginea</i> | Cork Oak | ?Sweet | • |
| | <i>Q. suber</i> | Cork Oak | ?Sweet | • |
| Italy and Corsica | <i>Q. cerris</i> | Turkey Oak | | |
| | <i>Q. congesta</i> | | | |
| South-east Europe and the Black Sea Coast (E) | <i>Q. ihaburensis macrolepis</i> | Valonia Oak | ?Sweet | • |
| | <i>Q. pyrenaica</i> | | | |
| | <i>Q. sticula</i> | | | |
| | <i>Q. suber</i> | Cork Oak | ?Sweet | • |
| | <i>Q. trojana</i> | | | |
| | <i>Q. virgiliana</i> | | | |
| Western Turkey and the Levant (F) | <i>Q. cerris</i> | Turkey Oak | | |
| | <i>Q. dalechampii</i> | | | |
| | <i>Q. frainetto</i> | | | |
| | <i>Q. infectoria infectoria</i> | | | |
| | <i>Q. ihaburensis macrolepis</i> | Valonia Oak | ?Sweet | • |
| | <i>Q. macranthera</i> | | | |
| | <i>Q. polycarpa</i> | | | |
| | <i>Q. pontica</i> | | | |
| | <i>Q. trojana</i> | | | |
| | <i>Q. virgiliana</i> | | | |
| Western Turkey and the Levant (F) | <i>Q. amygdolia</i> | | Sweet | |
| | <i>Q. aucheri</i> | | ?Sweet | |
| | <i>Q. brantii</i> | | ?Sweet | |
| | <i>Q. cerris</i> | Turkey Oak | | |
| | <i>Q. hartwissiana</i> | | | |
| | <i>Q. infectoria boissieri</i> | | ?Bitter | |

| REGION | SPECIES | ENGLISH |
|---|--------------------------------|---------|
| Central and Eastern Turkey, Iraq and Iran (G) | <i>Q. brantii</i> | |
| | <i>Q. castanaefolia</i> | |
| | <i>Q. cerris</i> | Turkey |
| | <i>Q. infectoria boissieri</i> | |
| | <i>Q. libani</i> | |
| | <i>Q. macranthera</i> | |

Nomenclature and distribution follow (in order of) (1982), Tutin et al. (1964) and Browicz (1982). See mg. Data on taste are from Gausсен & Rouquette (1949) Howes (1948), Smith (1929), Tutin et al. (1964) and Smith (1929), Townsend (1980).

factors are responsible for the taste of an acorn most important of these is probably the tannin tannin are more astringent, and generally refer 'sweet' acorns generally contain some tannin. subjective: in addition there may be cultural variability in human perceptions of astringency acorns of the Holm Oak (*Quercus ilex*) are usually: of the most reliable authorities (Hedge and Yalcin report them as bitter, with their close relatives in (*Quercus aucheri*) and the western (*Quercus rot* differentiated in part by their sweet acorns. Sw referred to in the literature as 'edible' acorns. T all acorns can be made edible, by leaching c neutralizing the tannins. Tannin concentration between trees of one oak species, a fact recognized by Hott (1916). Some acorns of the Holm O palatable even when raw, and the same is said



| ISH NAMES | TASTE | FOOD USE RECORDED |
|-------------|--------------|-------------------|
| e Oak | Bitter/Sweet | |
| nonlare Oak | Bitter/Sweet | • |
| es Oak | Bitter | • |
| Oak | Sweet/Bitter | • |
| Oak | Sweet | • |
| Oak | Sweet | • |
| ey Oak | ?Sweet | • |
| ia Oak | ?Sweet | • |
| Oak | ?Sweet | • |
| ey Oak | | |
| ia Oak | ?Sweet | • |
| ey Oak | Sweet | |
| ey Oak | ?Sweet | |
| | ?Bitter | |

| REGION | SPECIES | ENGLISH NAMES | TASTE | FOOD USE RECORDED |
|---|-----------------------------------|---------------|--------|-------------------|
| | <i>Q. infectoria infectoria</i> | | Sweet | • |
| | <i>Q. ihaburensis ihaburensis</i> | Valonia Oak | ?Sweet | • |
| | <i>Q. ihaburensis macrolepis</i> | | | |
| | <i>Q. libani</i> | | | |
| | <i>Q. trojana</i> | | | |
| | <i>Q. vulcanica</i> | | | |
| Central and Eastern Turkey, Iraq and Iran (G) | <i>Q. branti</i> | | Sweet | • |
| | <i>Q. castanaefolia</i> | Turkey Oak | | |
| | <i>Q. cerris</i> | | | |
| | <i>Q. infectoria boissieri</i> | | Bitter | • |
| | <i>Q. libani</i> | | | • |
| | <i>Q. macranthera</i> | | | |

Nomenclature and distribution follow (in order of priority) Hedge & Yaltirik (1982), Tutin et al. (1964) and Browicz (1982). See map 1 for areas of distribution. Data on taste are from Ganssen & Rouquette (1949), Hedge & Yaltirik (1982), Howes (1948), Smith (1929), Tutin et al. (1964) and the author's own observations. Records of use are from Hedrick (1972), Howes (1948), Mason (1991), Smith (1929), Townsend (1980).

Table 1.1
Oaks of western Eurasia

factors are responsible for the taste of an acorn (Mason 1992, 153-4), the most important of these is probably the tannin content. Acorns high in tannin are more astringent, and generally referred to as 'bitter'. Even 'sweet' acorns generally contain some tannin, and the term is rather subjective: in addition there may be culturally- or genetically-based variability in human perceptions of astringency (Mason 1992, 148). The acorns of the Holm Oak (*Quercus ilex*) are usually said to be sweet, but some of the most reliable authorities (Hedge and Yaltirik 1982; Tutin *et al.* 1964) report them as bitter, with their close relatives in, respectively, the eastern (*Quercus aubertii*) and the western (*Quercus rotundifolia*) Mediterranean differentiated in part by their sweet acorns. Sweet acorns are frequently referred to in the literature as 'edible' acorns. This term is misleading, as all acorns can be made edible, by leaching or otherwise removing or neutralizing the tannins. Tannin concentrations can vary considerably between trees of one oak species, a fact recognised by Theophrastus (3.8, trans. Hort 1916). Some acorns of the Holm Oak and *Quercus branti* are palatable even when raw, and the same is said to be true of acorns from



some trees of English Oak (*Quercus robur*) and Sessile Oak (*Quercus petraea*), the two species native to Britain (Mason 1992, 154).

It is not possible to assume, as some have done, that only 'sweet' acorns will be eaten (see Mason 1992, 84). The table on p. 18 shows those species which are recorded to have been utilized as food – seven of the 28 species. As the table indicates, two of these have astringent, or 'bitter', acorns, two have sweet acorns, and the remainder are variable or unknown. In North America, where acorns high in tannins tend also to have higher fat concentration, these seem to have been used at least as commonly as the sweeter species (Mason 1992, 74, 144-6, 148-9, 184). The correlation between fat and tannin does not necessarily hold with the western Eurasian species. Acorns of the Holm Oak and *Quercus brantii* are the species most commonly reported to have been used. These, both usually recorded as 'sweet' species, seem also to be slightly higher in fat than other species in their localities (Mason 1992, table 8). It may be that in some instances a high fat content, or perhaps other factors, are more important considerations in human choice than is a low concentration of tannins.

How acorns are used: ethnographic data and archaeological inference

Together with biological data, historic and ethnographic reports can aid the interpretation of archaeological data on acorn use, and enable more explicit inferences to be made about the past use of acorns. Such data can aid the understanding of factors that influence human decisions on acorns (either of particular species, or whether to use acorns at all). In addition, knowing something of the kinds of processing and preparation procedures required to make acorns palatable can aid an understanding of taphonomic processes, and thus can suggest what evidence of acorn use might, or might not, be expected in the archaeological and archaeobotanical records.

Though the sweetest acorns can be eaten after boiling or roasting like chestnuts, in all parts of the world where they have formed a major element of the diet acorns have generally been processed in more complex ways. Some form of leaching is generally required to remove the water-soluble astringent tannins from the acorns, and they are usually reduced by some means to a flour, which can then be baked into a bread- or cake-like substance, or cooked as a soup or 'mush'.

Probably the best accounts from western Eurasian acorn foods derive from Sardinia. Usai (1969) collected the island, some obtained this century (see also Nees 1969). Usually of Holm Oak, were first shelled, usually in a container such as a goatskin bag. The kernels were then boiled in water for up to eight hours. This would dissolve into a porridge-like mush, a process which would be aided by crushing with a pestle and mortar. Characteristic of the sequence was the addition of red clay to the mush, present in the clay, and this has been shown to be present in the acorns to form an insoluble compound, an effect of any remaining astringency (Johns and Duque 1992). The cooking mixture probably assisted by neutralizing any astringent taste (Mason 1992, 62-3). The particular method used would require ready availability of fuel for such well as suitable vessels, perhaps of metal or pottery, used most widely in California contrasts in this with the Sardinian method. A great deal of detail is recorded (see Mason 1992, 68-72), and a very generalised account.

In California acorns were invariably shelled with a mortar and pestle, with tools such as a flat or cupped rock, or a mortar. In some cases these were 'bedrock' mortars. Similar features are found in parts of Sicily (Wright 1991). The flour was next placed in a hot water bath, sometimes lined with leaves or other material. The mixture was repeatedly poured over the flour several hours, until all the tannins were leached



a colour change in the flour from yellow to white. Leached flour and water were then cooked in watertight baskets, by the 'stone-boiling' method. Carefully selected stones, which would not crack with sudden temperature changes, were heated in the fire, then placed in the basket, and the mixture was stirred as it thickened to prevent burning. The 'mush' was eaten hot or cold, and when cool had a consistency firm enough to be cut into squares. Alternatively, moistened flour might be formed into large cakes which were wrapped in leaves and baked, often overnight, in a pit oven of heated stones insulated with a covering of earth.

Conclusions: preconceptions and biases

This paper has indicated something of the several types of data which can be used when investigating the role of acorns in past diet. Many of these are, however, subject to biases and it is important to recognise these. Biases affecting biological and archaeological data in particular have been discussed at length elsewhere (Mason 1992, chapters 7 and 8), and some of the problems with interpretation of archaeobotanical data have also been touched upon above. Documentary and ethnographic reports also are subject to their own biases. For instance, because of the problems of oak taxonomy and nomenclature, as well as the difficulties of translating plant names which pre-date the introduction of the Linnaean binomial system of nomenclature, to determine with certainty which species were referred to by the ancient writers, or even whether they were referring to oaks and not to other genera of food-producing tree, is virtually impossible (see e.g., Daubeney 1865; Hedrick 1972, 481; Hott 1916; Meiggs 1982; Sargeant 1920). Some more recent reports of acorn use give some indication of other biases. In one example, from a Mexican village, most people considered acorns to be inedible, but nevertheless believed them to be used in neighbouring mountain villages (Messer 1978), a situation reminiscent of the Greeks' view of acorn-eating in Arkadia. Similarly, one note of acorn use written by a North American as late as the middle part of this century (Hill 1952, 357) recorded that acorns currently 'furnish 25% of the food of the poorer classes in Italy and Spain in the form of acorn bread or cake', a report that is certainly not repeated in the European literature. It is a common experience among ethnobotanists that many

people will not readily admit to the use of wild plant-food use is commonly attributed to more remote they are. This does not, of course, mean that they were not being used by these 'others', but it provides a bias that may affect such reports.

The extent to which such biases have distorted both ancient and more modern periods is probably regarding the value of acorns as a food dates by written sources, and persists to the present day literature. In recent times, it seems likely that preconception that acorns are something nasty which has prevented serious consideration of them in past diets. A close examination of the ethnographic such preconceptions are poorly founded. In Sicily, retained particularly as special foods for feasts despite Europeans' reports of acorn mush as bland were an esteemed food, and the cooking of acorns account subtle differences in the tastes of different the true role of acorns as a past food source – as a food fit for the gods, or both – will require further archaeological and archaeological research, but both our own and past preconceptions remain important resource.

Many thanks to Jon Hather and Ann Butler for their comments on this paper; and to David Harvey for his many acorn

Andronicus, M. 1987 *Virginia: the Royal Tombs and the Archaic City* (Athens).

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our from yellow to white. Leached flour and water at night baskets, by the 'stone-boiling' method. es, which would not crack with sudden tempera- red in the fire, then placed in the basket, and the t thickened to prevent burning. The 'mush' was hen cool had a consistency firm enough to be cut ely, moistened flour might be formed into large ped in leaves and baked, often overnight, in a pit nsulated with a covering of earth.

d something of the several types of data which can ing the role of acorns in past diet. Many of these o biases and it is important to recognise these. cal and archaeological data in particular have been where (Mason 1992, chapters 7 and 8), and some nterpretation of archaeobotanical data have also ve. Documentary and ethnographic reports also i biases. For instance, because of the problems of enclature, as well as the difficulties of translating -date the introduction of the Linnaean binomial s, to determine with certainty which species were nt writers, or even whether they were referring to neta of food-producing tree, is virtually impossible 55; Hedrick 1972, 481; Hott 1916; Meiggs 1982; ; more recent reports of acorn use give some in- s. In one example, from a Mexican village, most ns to be inedible, but nevertheless believed them ring mountain villages (Messer 1978), a situation ks' view of acorn-eating in Arkadia. Similarly, one n by a North American as late as the middle part ;2, 357) recorded that acorns currently 'furnish 25% er classes in Italy and Spain in the form of acorn rt that is certainly not repeated in the European non experience among ethnobotanists that many

people will not readily admit to the use of wild plants, but it also appears that wild plant-food use is commonly attributed to others, the more so the more remote they are. This does not, of course, mean that wild plant foods were not being used by these 'others', but it provides an intriguing insight into the biases that may affect such reports.

The extent to which such biases have distorted documentary reports from both ancient and more modern periods is probably unknowable. Ambiguity regarding the value of acorns as a food dates back to some of the earliest written sources, and persists to the present day in the archaeological literature. In recent times, it seems likely that it may be largely the preconception that acorns are something nasty, and even poisonous, which has prevented serious consideration of their use by many interested in past diets. A close examination of the ethnographic record indicates that such preconceptions are poorly founded. In Sardinia acorn foods were retained particularly as special foods for festivities; and in California, despite Europeans' reports of acorn mush as bland and unpalatable, acorns were an esteemed food, and the cooking of acorn products took into account subtle differences in the tastes of different species. To discover the true role of acorns as a past food source – as a last-resort famine food, as a food fit for the gods, or both – will require not only improvements in archaeobotanical and archaeological research, but an acknowledgement of both our own and past preconceptions regarding such a potentially important resource.

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❖ 2 ❖

BARLEY-MEAL and wheaten flour are 'the marriage' (Odyssey 20.108). In the Mediterranean, food is foremost. In Hebrew and Greek the words for food are *sitos* respectively, which specifically mean grain or wheat, always preferred for human food, the Egyptian both, always gave barley precedence (Währen 1987: 18.72) held barley to be the oldest cereal. It was used in the most ancient Greek sacrifices: Plutarch *Greek Questions* 6 = *Moralia* 292b-c

Modern research tends to show that the cultivated wheat had begun at much the same time, in the 8th millennium, especially in Greece, and long remained without access to stony home-grown wheat imports. This is because barley grows well on fertile deep soil that it likes best, but also on the characteristic of Greece and the Judaean hills, arid of the Mediterranean world. It is not nearly as respect to rain supply while germinating, and

lways been receptive to craftsmen and ideas from the
reek mainland, particularly from Athens, took up the
otion of the red-figured fish-plate and made it their own.
Much the largest proportion of the fish-plates that are
nown now (over one thousand) were made in these west-
rn localities.

The Exeter fish-plate was made in Campania, most likely in
r near the town of Cumae, and comparison with other
nown examples suggests that it was decorated by the
onython Painter soon after the middle of the 4th century
3C. The fish depicted are two-banded and striped bream;
hell-fish are also included, one large and three small white.
The plate with its central depression and its decoration
nderlines the importance of fish in the diet of the time.

Brian Sparkes

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p. 40 and pl. 10, 1. The Exeter fish-plate should be added as Cam-
pania IIC21 no. 56b.

FOOD IN ANTIQUITY

John Wilkins, David Harvey & Mike Dobson

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Foreword by

Alan Davidson

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