



*The undersides of granite boulders such as these  
were the resting places of thousands of Bogong moths.  
Aboriginal people camped in this high country, near  
Thredbo, NSW, in summer.*

WELDON TRANNIES

# MOTH HUNTERS OF THE SOUTHEASTERN HIGHLANDS

J. M. FLOOD

**E**VEN THE COLDEST AND MOST RUGGED PARTS of Australia were occupied by hardy hunters and collectors during the summer. The Australian Alps curve in a great arc for 500 kilometres around the southeastern corner of the continent. They reach their highest point at Mount Kosciusko (2229 metres), which is snow-capped for three to four months each year. Wind, rain and fog increase the harshness of winter conditions. Despite its severe climate, however, during the warmer months Aborigines occupied even those areas that had been snow-covered.

The topography is varied, including the snow country (land above about 1370 metres), undulating plateaux and river valleys running both inland and towards the coast. Most of the region lies at more than 600 metres above sea level, but some deep river valleys such as that of the lower Snowy River drop to elevations of less than 300 metres. The Victorian Alps are generally lower than the Snowy Mountains of New South Wales but are deeply dissected, with a number of steep-sided outlying plateaux and isolated peaks giving them a mountainous, rugged aspect.

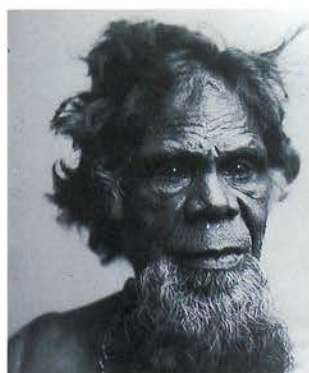
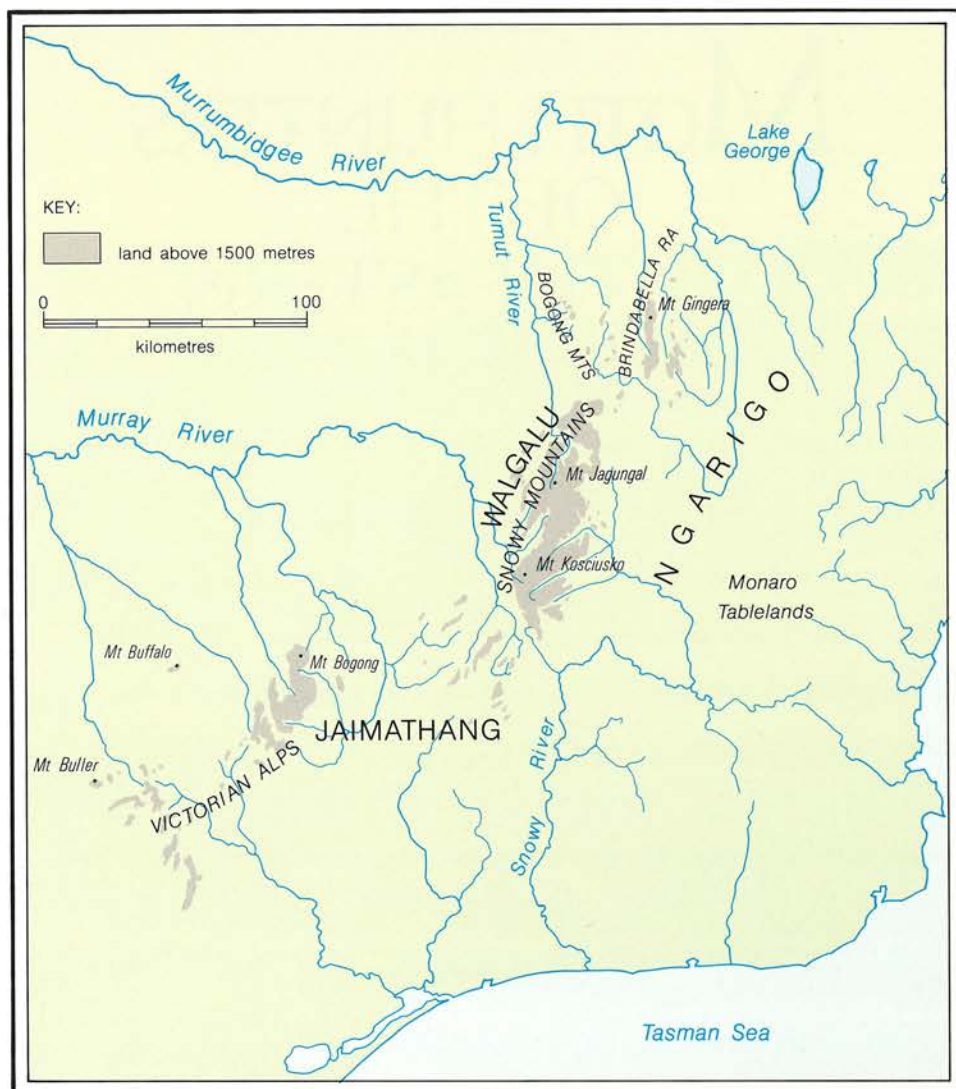
Aborigines not only visited the highest mountains occasionally but they lived in the uplands all the year round, camping in the lower valleys in winter. Within the Alps there are areas that are almost frost-free, such as the lower Snowy and Tumut river valleys. Evidence that these areas were used as winter retreats comes from both archaeology and ethnography. Scatters of stone tools from campsites have been found along the middle and lower reaches of the Snowy River and all descriptions of the highland Aborigines by early settlers and anthropologists suggest that they stayed within the uplands even in winter, although in the lowest, warmest parts.

The main social groupings of the Snowy Mountains were the Ngarigo and Walgalu. The Ngarigo occupied the Monaro tableland, their territory extending from near the modern Queanbeyan to Nimmitabel and Delegate. The territory of the Walgalu extended over the great alpine ranges in which the Murrumbidgee



Southeastern Australia  
showing group locations and  
alps.

J. GOODRUM



Yibai-Malian or Murray Jack, leader of the Walgalu, and one of A.W. Howitt's main informants. Photograph by Henry King.

TYRRELL'S BOOKSHOP, SYDNEY

and Murray rivers rise. They were located on the headwaters in the upper Tumut valley, the Bogong Mountains and around Kiandra. In what is now the Victorian Alps the main group was the Jaimathang, who occupied the Omeo area. The highland peoples intermarried and had similar beliefs and social organisation. They held the same type of initiation ceremonies, the *kuringal*. They believed in the same deities and in an afterlife in a country on the other side of the sky.

The highlanders had less abundant food resources and were therefore more nomadic than the people of the coast or the rich inland riverine plains. Their material equipment was restricted to easily transportable items. A woman would have her digging-stick, one or two carrying-dishes and a warm possum skin cloak, a man his cloak, stone axe, boomerang, club and spears. One distinctive artefact of the highlanders was the death spear, a wooden spear armed with about ten stone barbs set in resin on either side of the shaft. This was a lethal weapon, for the stone barbs were set at an angle so that when the spear entered animal or human flesh it could not be pulled out.

The huts of the highlanders were generally simple, quickly erected bark or bough shelters, but in winter sturdy, weatherproof huts were made from large

sheets of stringybark (*Eucalyptus macrorhyncha*). Bark also provided the raw material for making canoes and the scars left by removal of large sheets of bark can still be seen on some large old 'canoe trees' on the banks of the Murrumbidgee and Snowy rivers. One such canoe tree scar is visible on a large Blakely's gum (*Eucalyptus blakelyi*) near the Murrumbidgee about half a kilometre north of Lanyon homestead near Canberra.

Possums, birds, kangaroos, wallabies and vegetable foods were the main food staples of the highlanders. Some surviving trees bear a series of footholds cut with a stone axe in the course of possum hunting. Large game such as kangaroos and emus was not easy to catch and necessitated co-operative methods of hunting. Sometimes the animals were driven into a river or speared from a hunting hide, but the most common method was by the use of fire. When dry grass and undergrowth were ignited, game fled into the open, to be speared by the waiting circle of hunters. When the young grass grew again after the fire, game was tempted out of the bush to feed on the tender shoots, again becoming exposed to the hunters.

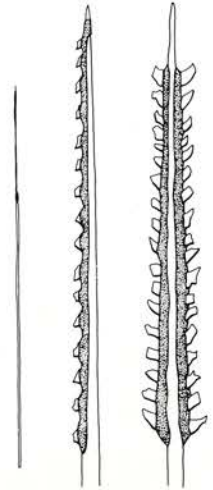
Easier prey were ducks, especially the flightless, moulting birds found on the lakes after breeding in July and August each year. The waters of Lake George and other lakes and lagoons on the high tablelands held ducks by the hundreds of thousands and flocks, flying away in fright, could darken the face of the sun like a heavy cloud. Ducks and other aquatic birds such as broilgas and black swans were hit on the wing by a boomerang or stone, caught in pits dug at the side of lagoons and covered in grass, captured with slip nooses attached to triangles of bent reeds or long rods, or grabbed by an underwater diver breathing through a reed.

Death spear heads barbed with quartz flakes set in resin.

Left:

Sketch of spear, total length about 4 m. The barbed head is about 30 cm long. Centre and right: details of two barbed heads.

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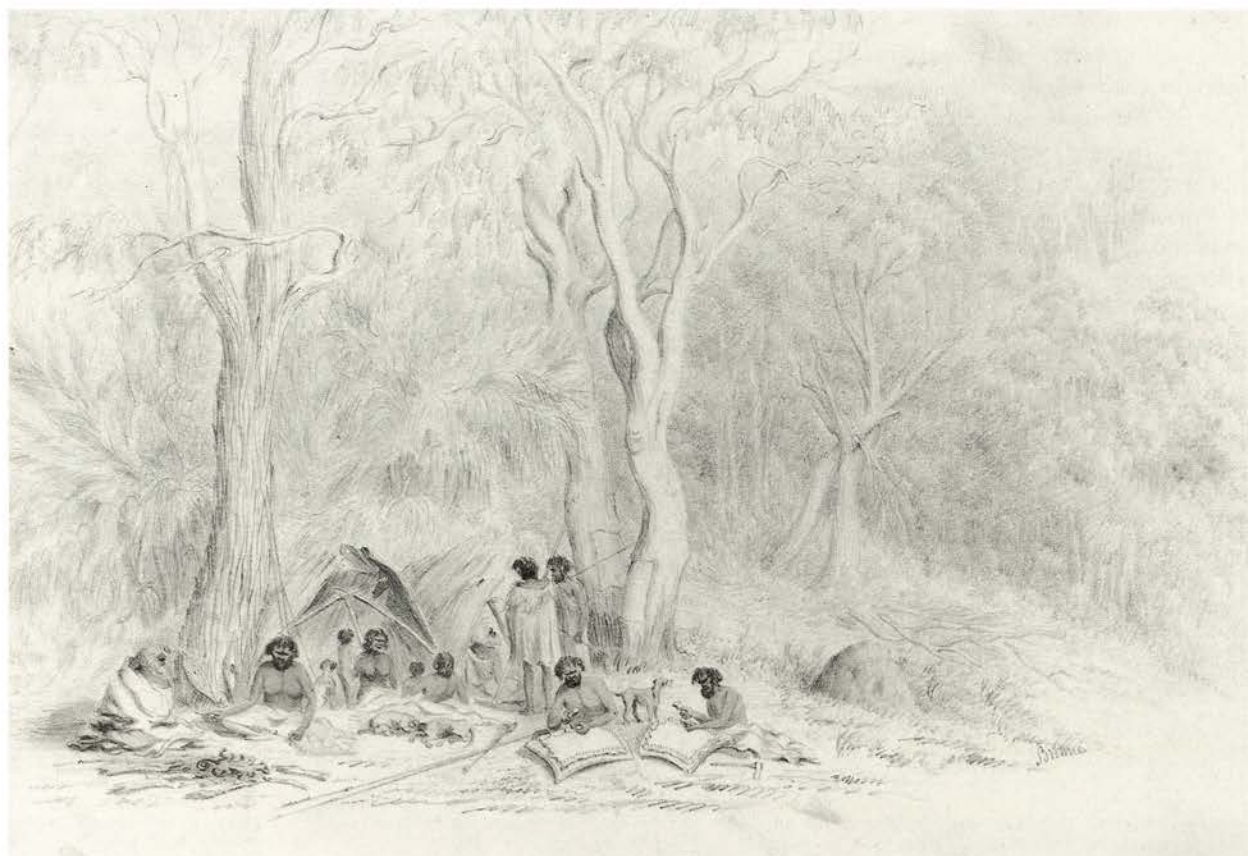


Canoe tree on the Murray River. A large sheet of bark was removed from this tree to make a canoe.

R. EDWARDS

Detail of the design on a possum skin cloak, dated 1872.

MUSEUM OF VICTORIA



*Aboriginal group manufacturing possum skin cloaks. From J. Brown, Sketches in Australia and the South Seas, nd.*  
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Throughout the year, vegetable foods were a staple, particularly the tubers of the yam daisy, *Microseris scapigera*. This is a small perennial plant with a yellow flower resembling a dandelion, upright smooth leaves and a small milky tuber the size of a small radish, and growing a few centimetres below the ground. The leaves start to sprout from the tuber in autumn, and as the old tuber shrivels, a new tuber forms during winter. In spring flowers appear, but as the summer dryness sets in the leaves shrivel and the tuber enters its summer dormant period before sprouting once more in late autumn. Tubers could be eaten at any time during the year, but were avoided during the early winter when the old tubers shrivel and become bitter and the new tubers have not yet enlarged.

The tubers of the yam daisy are small, averaging about two grams in weight, but can reach six grams in favourable soil and climatic conditions. They could be eaten raw, but were normally roasted to produce a dark, sweet juice. This sweetness and coconut-like flavour made them a welcome addition to a diet with few sweet foods. Besides, they were abundant and easy to dig.

Other important vegetable foods in the highlands were orchid tubers, fern and bulrush roots, the starchy pith of tree-fern trunks, the young shoots of the grass trees, seeds and fruits. From late winter to early spring some wattles begin to bloom and the seeds from the ripening pods could be picked out and eaten. The first orchids begin to appear in August and September, when their tubers could be roasted; these are not large, but orchids are fairly plentiful in the uplands. However, the main food supplement in spring was fish, which are plentiful in the larger rivers from about September to May.

Fish seem to have been an important item in the diet, particularly in summer.

Seasonal variation in river flow on the southern uplands is not as great as in the lower stretches of the rivers to the west, but the fish do move downstream in winter (May to September). They return again around September to spawn, and move several hundred kilometres up towards the headwaters. So from October to April, there is plenty of fish movement throughout the tablelands.

Different groups of freshwater fish are found in the drainage systems of the westward-flowing Murrumbidgee–Murray–Darling system and the southeastern slopes system, rivers that are short and have a large runoff. In the Murrumbidgee River, and in all except its uppermost tributaries, Murray cod (*Maccullochella macquariensis*) are fairly plentiful and average between four to thirteen kilograms, with specimens of up to thirty kilograms being common. Other edible fish of reasonable size are the trout cod (*Maccullochella mitchelli*), which weighs up to about sixteen kilograms and the silver perch (*Bidyanus bidyanus*), which can reach a length of sixty centimetres and weight of eight kilograms, but which in the Canberra region is generally between one and two kilograms in weight. In the cooler, higher reaches of the Murrumbidgee River and its tributaries, Macquarie perch (*Macquaria australasica*) reaches about thirty centimetres in length, and can weigh up to three or four kilograms.

In the Snowy River and its tributaries and in the southward and eastward-flowing rivers of the southeastern slopes drainage system, eels (*Anguilla australis* and *A. reinhardti*) provided an excellent food source, growing to over one metre in length and to the thickness of a man's arm. In Australian rivers, eels make no annual migration as they do in New Zealand, but may spend ten to twenty years in fresh water before descending to the sea to spawn. Eels were caught in hollow log traps or were stupefied by an infusion of bark in inland ponds.

People of the southern uplands region had at least three different methods of taking fish. The first was an individual activity, the fish being speared from a canoe,



Roasted tubers of the yam daisy (*Microseris scapigera*) were a staple food of highland Aborigines.

J. FLOOD

Native women gathering roots. Drawing, 'Indented Head', 27 May 1835, by J. H. Wedge.

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using a bait on the end of a spear, or simply run through from the bank. The other two methods both involved co-operation. One was the fish drive, in which about a dozen Aborigines entered the water at one end of a waterhole. A few minutes later most of the group entered the waterhole at the other end and moved forward, making loud noises. This disturbance drove the fish to the other end, where a great many were speared. The other was a method of stupefying fish. A group would dam the course of a river or creek, place the leaves and branches of tea-tree or hickory in the waterhole, then insert poles under the rocks and into crevices. Soon the fish floated to the surface, stupefied from the narcotic effects of the leaves.

Other riverine food resources exploited by the upland Aborigines were platypus, crayfish, tortoise and shellfish, such as large mussels of the super-family Unionoidea, which are common in the Murrumbidgee–Murray system and in the rivers of eastern New South Wales and Victoria. The crustacea which have been called crayfish, lobster and yabby are three different species of freshwater crayfish, distinguishable from marine crayfish because of their large nippers. Among the various species of crayfish, two were of interest to the Aborigines, the large spiny crayfish *Euastacus armatus* of the major streams, and the small yabby *Cherax* of the ponds and swamps. The yabbies were considered delicious eating. They burrowed deep into the mud and were captured by thrusting the hand into the holes and dragging them out. Yabby holes were often so deep that the whole arm had to be inserted. Yabbies measure up to about thirteen centimetres long, but the spiny crayfish of the major rivers are much larger, thirty to forty-five centimetres, and weigh one to three kilograms. They were found under large stones and were taken by hand when the rivers were low. Other small crayfish were found in small streams and soaks of the mountain ranges right up to the topmost permanent waters on Mount Gingera and Mount Kosciusko. They provided at least a mouthful, as did the yellow and black striped corroboree frog (*Pseudophryne corroboree*).

Montane forest and frost hollows in the upper Cotter River valley, Namadji National Park, ACT. The mountain in the centre is Coronet Peak, the site of an Aboriginal stone arrangement.  
J. FLOOD





*The lower Snowy River valley, a favoured winter camping place for highland Aborigines.*

J. FLOOD

Two favourite items of food were the flesh of an emu, a luscious treat, and the young of a platypus, described as '*murrey budgeriee patta*' (very good to eat). The young were obtained by digging out the burrows in the summer, but adult platypuses were also speared from the banks with small wooden spears. Platypus (*Ornithorhynchus anatinus*) were found in all permanent streams with fairly large pools up to the alpine zone. They were there at all times of the year, but were most abundant during the spring and summer months.

The only species of river creatures substantial and plentiful enough to be important for Aboriginal diet were the large fish, crayfish and shellfish found in the warm waters of the central Murrumbidgee and its lowland tributaries, and perhaps the eels of the Snowy River system. In the spring and summer months these foods may have attracted some people towards the rivers and lagoons of the tablelands, but they were abundant only in comparison with the scarcity of winter foods. An even richer summer food source was needed to support the movement of Aborigines into the high country which took place every summer.



The highlanders consolidated their common language and culture by coming together each year for ceremonies of initiation, gift exchange and marriage arrangement. Hundreds of people met at places including those now called Jindabyne on the Snowy River and Blowering in the Tumut valley. How could such a multitude be fed? The highlands are not rich in food, but they have one outstanding seasonal resource—the Bogong moth. The small brown moths, *Agrotis infusa*, migrate in their millions each spring from breeding grounds on the plains of western New South Wales and southern Queensland to the highest summits of the Alps. In dry and dark crevices in the granite tors, they aestivate (the summer equivalent of hibernate) from about October to March.





LIFE CYCLE OF THE BOGONG MOTH

The Bogong moth (*Agrotis infusa*) is a dark brown insect with a wing span of about four centimetres. It goes through four distinct stages in its life. Eggs are laid in late April and May on broad-leaved plants (dicotyledons) on the western slopes and plains of New South Wales and southern Queensland. An adult female can lay up to two thousand eggs but does not live long once the eggs are laid.

The eggs hatch in June and the larvae (or caterpillars) emerge. The larvae feed on the leaves of the dicotyledons and grow quickly. In a year of high rainfall and abundant winter food larvae can become extremely numerous.

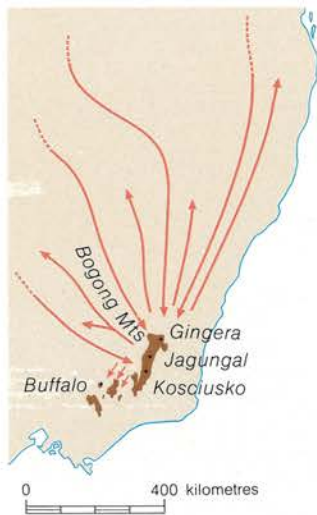
When the larvae are fully grown, they crawl from the plant and tunnel into the ground to pupate. A hard shell is formed to cover the body, and inside that shell the larvae change to adults. The adults then emerge from the case, crawl out of the soil and settle on a plant to let their wings dry.

In the final, adult stage the moths migrate to the mountains, where they aestivate (the summer equivalent of hibernate). By the million they fly hundreds of kilometres, feeding on the nectar of eucalyptus and other flowers. They migrate in a southeasterly direction to the alpine summits, finding their way to the same habitats that have been occupied annually by their predecessors.

The moths aestivate in cool crevices on the high granite outcrops, generally remaining quiescent except when some take a flight after sunset and at dawn, their concerted wing beats producing a remarkable, deep humming sound.

In late summer the moths that have survived the attention of predators or parasites start the flight back to their breeding grounds. By the end of March most have gone from the mountain crevices.

Then the cycle begins again. Nectar is sought, mating occurs and eggs are laid. The complex pattern of migrating and aestivation seems to be an adaptation to the relatively harsh environments of the breeding areas. Migration permits the moths to vacate the breeding grounds before they become too hot and dry for the larvae and adults to survive, and before the areas are dominated by perennial summer grasses (monocotyledons) that are unfavourable as larval food.



KEY:  
 → migrations of the Bogong moth  
 ■ land above 1500 metres  
*Annual migrations of Bogong moths.*  
 J. GOODRUM

The first moths to arrive enter the darkest crevices and settle side by side and head upwards on the walls. Later arrivals tuck their heads under the wings of the firstcomers, forming layers on the walls like tiles on a roof. As many as 17 000 have been counted on one square metre of wall.

Five different mountain ranges, spanning the whole arc of the Alps, house aestivating moths. These are the Bogong Mountains, the Kosciusko region, the Bogong high plains of Victoria and the Brindabella and Tinderry ranges. These summer habitats are generally above 1300 metres, the deepest and darkest crevices on the windward side of the highest tors being occupied first.



1.

2. 3.



1. Mt Twynam, looking towards Mt Kosciusko, Snowy Mountains. The highest Aboriginal campsite yet found in Australia is on this peak, which is also a moth aestivation site.

J. FLOOD

2. Granite tors in Mt Buffalo National Park, Vic, a habitat for moths in summer.

J. FLOOD

3. Sentry Box Hill in the south of Namadgi National Park, ACT. An Aboriginal stone arrangement lies on the granite slabs in the background.

J. FLOOD

*Moths aestivate on dry, dark walls of rock crevices and caves on Mt Gingera, ACT.*

I. COMMON



*The Bogong moth is a small brown moth, about 2.5 cm long, distinguished by its unique migration to the Australian Alps each summer.*

I. COMMON

One granite tor probably contained habitats for enough moths to feed one group of people for a season, but where the tor was less dissected and smaller, a larger area was needed. When they are plentiful, however, moths will aestivate even under small rocks on a slope, so a peak such as Kosciusko, which lacks caves and crevices, may well become a moth habitat.

The presence of moths is signalled by the crowds of crows, ravens or currawongs that congregate hungrily around the rocks concealing the moth habitats. The Aborigines fed not only on moths but on moth-fattened birds. Dogs also fed on the moths, and grew sleeker than usual.

Moths were abundant, highly nutritious and easy to collect and roast. A roasted moth is a rich energy package, containing an average of 20 per cent fat and 27 per cent protein. If each person ate half a kilogram of moths daily (and that would be easy), he or she would consume about 1500 calories or 6300 kilojoules—a high-energy diet by any standards.

The numbers of moths fluctuated from year to year. Sometimes many were blown out to sea, but there were always enough sheltering on the summits to support large ceremonial gatherings. In spring, as soon as the snow had melted from the high peaks, couriers carrying message sticks were sent out to summon the affiliated groups. Highland Aborigines trekked for hundreds of kilometres to gatherings on the route to Kosciusko and other summits of the Snowy Mountains, and at the foot of the Bogong Mountains in the Tumut valley. They made steep climbs, such as from Tom Groggin on the upper Murray to Kosciusko, an ascent of 1600 metres.

Richard Helms, a naturalist travelling through the Kosciusko region in 1889, described moth hunting in detail, and incidentally included the best recipe for cooking Bogong moths. He saw millions, and old settlers told him about their exploitation by Aborigines. He did not understand the ceremonial significance of the gatherings, but his words illuminate the scene.

As early as October, as soon as the snow had melted on the lower ranges, small parties of natives would start during fine weather for some of the frost-riven rocks and procure 'Bugongs' for food. A great gathering usually took place about Christmas on the highest ranges, when sometimes from 500 to 700 aborigines belonging to different friendly tribes would assemble almost solely for the purpose of feasting upon roasted moths. Sometimes these natives had to come great distances to enjoy this food, which was not only much appreciated by them but must have been very nutritious, because their condition was generally improved by it, and when they returned from the mountains their skins looked glossy and most of them were quite fat. Their method of catching the insects was both simple and effective. With a burning or smouldering bush in the hand the rents in the rocks were entered as far as possible, when the heat and smoke would stifle the thickly congregated moths, that occupied nearly every crack, and make them tumble to the bottom of the cleft. Here an outstretched kangaroo skin or fine net made of kurrajong fibre would receive most of the stupefied and half-singed insects, which were then roasted on hot ashes. This process required some care and attention in order to prevent the bodies of the moths getting scorched, and therefore the ashes required to be not too hot and had to be free from large glowing embers. The insects were thrown upon the ashes and well mixed with them, and then the whole was stirred with sticks till the wings and legs had broken away and the body was cooked, when it generally shrivelled to the size of a grain of wheat. The mass was freed of the ashes by dropping it by degrees into some vessel or on a skin and allowing the wind to sift it; the food was still further cleansed from adhering particles of dust and other unpalatable substances by gently rubbing it between the hands, and rolling it backwards and forwards from one to the other whilst blowing from the mouth. The taste of the roasted bodies of the 'Bugongs' is, according to some Europeans who tried them, sweetish and nut-like and rather pleasant eating.

Stone pestles found in high-altitude Aboriginal campsites and thought to be moth pestles, used for grinding up moths into cakes. When examined under ultraviolet light they fluoresce on their working edges, indicating the presence of protein.

D. DRAGOVICH



COMPOSITION OF ALPINE FOODS PER 100 GRAMS (g)  
EDIBLE PORTION

Foods	Edible Portion %	Energy kilojoules	Water g	Protein g	Fat g	Carbohydrate g
Bogong Moth ( <i>Agrotis infusa</i> ) cooked whole	100	1260	49.2	26.8	19.8	1.5
abdomen only (47.2% of whole moth cooked)	100	1912	35.2	21.7	38.8	1.4
Possum flesh ( <i>Trichosurus amhemensis</i> ) cooked	100	700	61.3	33.6	3.5	0.0
Daisy yam ( <i>Microseris scapigera</i> ) raw	100	264	73.1	1.5	0.7	13.3
cf. Witchetty grub ( <i>Cossidae</i> ) uncooked	100	1760	38.0	17.6	37.5	4.6

When the groups met together at the foot of the mountains it was a time for ceremonies, ritual giving, music, arranging marriages, and occasionally for battles to settle old scores and intergroup feuds. George Dawson, an early European settler, described such a meeting.

They would have some great merry-making and corroborees, the lubras would sit around on their haunches with tom toms or native drums made of a piece of skin or hide stitched tight across a piece of bark curled before the fire and sticks put inside to keep it from closing right up ... they would beat these with their yam sticks or nulla nullas, and chant a native tune ... some played the reeds with their fingers and played them very well, their tunes being mostly of a plaintive kind.

Dances and songs were passed on from one group to another. One song concerned a platypus sitting on a rock in the river. Another described an attempt to cross the Snowy River in a leaky canoe during flood, with pantomimic action picturing the pushing off, the paddling, discovering the leak, and after an attempt to bale the water out by hand, a hurried return to shore where the hole is plugged with adhesive mud, and the performers put off again and paddle across. A few words of this song by the old Walgalu singer, Mragula, were recorded by the anthropologist A.W. Howitt.

<i>Burraburai</i>	<i>baiajanu kumber-neino wurgaiama</i>	<i>ngillingua burbund-u-malagua nunna</i>
Quickly	talking to his mate looking about	now paddling this side

Much exchange of goods went on at these gatherings. The main items traded were possum fur products, wooden artefacts, grass tree spears, axe stone and ochre. Possum fur rugs were especially valuable. These were made up from as many as eighty pelts sewn together with sinew from kangaroo tails, and complex designs were engraved into the skins to denote the owner's clan and totem.

At some markets, only complete sets of articles were traded, such as ten fighting boomerangs (*warangun*); ten grass tree spears (*gumma*); one shield for stopping spears (*bemata*) and one for club fighting (*millidu*); one club (*ujerung* or *bundi*) and one spearthrower (*meara*); or one belt of possum fur string (*ngulia*) with four men's kilts (*burrain*) and a bone nose peg (*gumbrun*) and a complete set of corroboree ornaments. The women also engaged in barter, trading possum fur rugs, baskets, bags and digging-sticks.

When men fought at these gatherings, the battle usually began as single combat, and when one or the other was beaten the fight became general. The old men would oversee operations, but not control the detail of action. Among the Omeo Aborigines, the oldest man of the tribe was recognised as a kind of chief, but whenever an attack on some enemy was planned, the ablest warrior was usually chosen to lead and the old men then endorsed his advice.

The camping arrangements were strictly regulated. Parties occupied dry ground, often facing the morning sun, and followed rules defining the position of the camps of married people, single men and visitors, as well as individuals within each camp and hut. Among the Walgalu, the father's father would be on the left-hand side of the fire, the father's mother on its right-hand side. The maternal grandparents would not occupy a place in their son-in-law's camp, but would make a camp for themselves behind that of the son-in-law.

While groups camped at the foot of the main ranges, an advance party would go up to the summits to see if the moths had arrived and to perform the necessary rites. Bullroarers were used, and there was much shouting. When all this had been accomplished, a smoke signal was put up and only then, never before, did the people waiting below break up into their separate groups and proceed indepen-

dently to the mountain tops. Some groups camped there, others built huts lower down in more sheltered positions and made a daily excursion to gather moths. The groups did not wander over the tops indiscriminately: each had its own area.

While the men climbed up to the summits, the women and children stayed in the valley below, collecting roots and other vegetable foods and hunting small game. Women were probably unable to feast on the moths until the male moth hunters returned from the mountains, bringing with them some of the roasted moths pounded into cakes resembling prunes. These delicacies would not usually keep fresh for more than a week, but smoking preserved them for much longer. They were carried about in coolamons (wooden carrying-dishes).

The fat and protein contained in the moths helped ward off the cold of the mountains and provided energy for trekking across the rugged country. Carbohydrate and fibre were supplied by vegetable food, such as the tubers of orchids, lilies and the daisy yam, fern roots and the starchy pith of the tree fern *Dicksonia antarctica*. Vitamins came mainly from fruits, such as berries of mistletoe (*Amyema*), the native cherry (*Exocarpus cupressiformis*) and native currant (*Coprosma quadrifida*). Sweetness in the diet was provided by native honey, nectar sucked out of bottlebrush and other flowers and the sweet, crumbly white gum exuded from the bark of the manna gum, *Eucalyptus viminalis*.

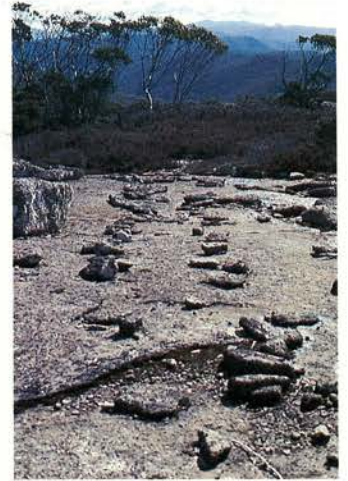


Archaeological evidence establishes that moth hunting has been practised for at least one thousand years. The evidence comes from Bogong Cave in the Tidbinbilla nature reserve south of Canberra. Moths aestivate in the cave and Aborigines used to camp in rock shelters in the same group of huge granite rocks. Excavation of part of the shelter floors revealed stone tools and old fireplaces, the oldest charcoal giving a radiocarbon date of 1000 years.



Double line of stones or 'corridor' in the Namadgi stone arrangement.

J. FLOOD



A 50-metre-long line of stones forms the central part of this extensive stone arrangement in the Namadgi National Park, ACT.

J. FLOOD

One stone artefact was pestle-shaped and was probably used to grind up moths into a paste. Similar round river stones have been found transported high into the Snowy Mountains and on natural routes across the ranges, such as Bogong Gap in the Gudgenby area. Examination under ultraviolet light has shown fluorescence on the edges of some of these stones, indicating they were used to grind up something containing protein. They were probably moth pestles.

Isolated finds of stone axes, pebble choppers and moth pestles have been made widely in the mountain ranges and a few high campsites have been identified. From Jindabyne, scatters of stone artefacts have been found on the natural route up to Kosciusko, the highest so far being on Little Twynham at 2100 metres. Other high camps are on Pound's Creek above Guthega and at Perisher Gap in the Kosciusko area, scattered along the tops of the Bogong Mountains and Brindabellas, and on Buffalo and Buller in the Victorian Alps.

Ceremonial sites have also been found where moths still gather. There are stone arrangements, at varying altitudes and taking many forms: single lines, corridors, circles, cairns and piles of stones in a wide variety of configurations. Bora rings, also known as ceremonial grounds, usually consisted of two cleared circles surrounded by earth banks a few hundred metres apart. One such ground is preserved on the southern end of the Bogong Mountains, south of Tumut. The rings lie at 1418 metres, occupying flats that are naturally open because of cold air drainage from the surrounding peaks which impedes tree growth. This is almost the only naturally open place on the whole of these forested mountains.

The circles, or more precisely ovals, consist of a flat area surrounded by a continuous earth bank, now about one metre wide and twenty centimetres high. The rings are of almost identical dimensions, and both have their longer axis on the same east-west alignment. They cannot be seen from each other, for they lie some three hundred metres apart with a small rise blocking the view.

Such rings were used during initiation ceremonies, which evidently took place on the Bogong Mountains after the initial corroborees had been held in similar rings in the Tumut valley. These ceremonies included tooth evulsion (the removal of a front tooth); only when that had been done could a youth marry. If he refused to take part in the ceremony, he would be killed. The ceremony was called *kuringal*, a name also given to the boys who ceremonially became men. The boys were first placed on an earth mound before a great fire and behind each boy stood his mother. The principal elder stood just inside the ring, a little way from the fire but close enough to prevent the boys from shifting before being tested sufficiently. The boys were then covered with rugs and led along a path to a small enclosure. The saplings along the path were bent down to form arches, under which the boys had to stoop or even crawl to learn obedience. In the small enclosure, two holes were dug, in which the novice stood while his tooth was knocked out. It seems that the youths were made to stoop while the elders raced past, pausing to dig their thumbnails into each young man's gum over a certain tooth so as to loosen it.

After the ceremonies the novices (*kuringal*) were taken away into the mountains, where they were in the charge of an old man. Daramulan, the all-father, who took care of the spirits of the dead, was believed to be watching them, and their dread was great. When the tooth was taken out, it was fastened to a piece of *kaiung*, the woman's apron, and was sent round in a bag of wallaby skin with some kangaroo teeth and red ochre. The novices were forbidden to eat possum, bandicoot, and, above all, emu eggs; they were told that, if they ate forbidden food, they would become ill by the magic of the creature eaten. But they were allowed to eat other foods such as kangaroo and fish.

The Ngarigo of the Monaro tableland believed that the magical powers of their

Rock painting thought to represent Daramulan, the all-father who lived in the sky and took care of the spirits of the dead. Jervis Bay area, ACT. Length about 30 cm.

J. FLOOD



Rock painting in a remote shelter in Namadgi National Park, ACT. The birds are probably emus or plains turkeys, both of which were common in the Canberra area at the time of European settlement. On the left is a human or spirit figure superimposed on what appears to be a man on horseback.

J. FLOOD



elders came from Daramulan, who once lived on the earth, where he taught men. He gave them the *kuringal* and told them what food to eat. When he died and was buried, his spirit went up to the sky. It was only when a young man had his tooth knocked out that the name of Daramulan was told to him. Daramulan could see people, and was angry when they did things they ought not to have done, such as eating forbidden food.

The Ngarigo believed in a land beyond the sky where there were other Aborigines. They thought that the spirit of a dead person (*bulabong*) went up to the sky where it was met and cared for by Daramulan. The sky was called *kulumbi*, and on the other side of it lay another country with trees and rivers. This sky country was a land like the earth, only more fertile, and plentifully supplied with game.

Each person's *bulabong* was believed to go into the bush for a time, killing game, making camps and lighting fires. The Ngarigo therefore tied a dead man up tightly, the hands placed open on either side of his face and the knees drawn up to his head. The grave was sometimes made like a well with a side chamber, sometimes by digging out a cavity in a bank. The body was buried either simply rolled up naked or dressed in full male ornament, wearing the belt and *bridda-bridda* (male ceremonial apron), and painted with pipeclay. The weapons, implements and *bridda-bridda*, if the last-named was not put on, were buried with the body. The Ngarigo practice was to cross a river after burying a body to prevent the ghost following them. The Walgalu were similarly careful to bury with a dead man his spears and nets and everything else belonging to him; even his canoe was cut into pieces and put into the grave.

*Paintings in a granite rock shelter in Namadgi National Park, ACT. Prominent among the motifs of animals and human figures are a long-necked tortoise and a kangaroo apparently being chased by two dingoes.*

*Aboriginal occupation in this shelter goes back more than 700 years.*

J. FLOOD



Opposite page.

Rugged country around Blue Lake in the Snowy Mountains, NSW, was only visited by moth hunters in summer.

WELDON TRANNIES

The first stage of initiation, the *kuringal*, raised the novice from boyhood to youth and removed him from the care of women. Then at eighteen to twenty years of age, when the hunter had a beard, he was made into a warrior by the *wahu* ceremony, which seems to have been common to all the highlanders. In this ceremony all the hair of the head was singed off close to the skull by burning fibrous bark. This had to be done gradually, the hair being blown out before it flared up too much. When all the hair had been removed, old men would come running towards the newly initiated carrying green boughs, which they would wave several times over his head. Then the men would run away and return swinging the boughs with a swishing sound in a certain direction, while naming the district towards which they were pointing. This was repeated three times for each of several directions. Each name mentioned was preceded by the exclamation 'Wau-wau!', for instance, 'Wau-wau! Tumut'; 'Wau-wau! Queanbeyan'. This indicated that the *wahu* might go to some of these districts as a friend, or that in some of these directions lived the people with whom he would have to carry on hereditary feuds.

Now that manhood had been conferred on the newly initiated, adding the responsibilities of a warrior to those of a huntsman, the respect due to a man was shown him, and in commemoration of the event a special privilege was granted. The newly made *wahu* was permitted to choose any woman he liked, except his blood relations, and to cohabit with her for the night, but for that night only. At any other time sexual intercourse outside marriage was regarded as either adultery or fornication, to be punished by a beating with clubs, sometimes severe enough to kill the offender.

The rituals and beliefs of the highlanders are reflected in the types of sites found in the mountains. In the lower valleys, many scatters of stone tools remain from the large camps frequently established there. Higher up are fewer, smaller camps but more ceremonial sites. Some ceremonial stone arrangements are located even on mountain summits themselves. The largest and most complex found so far is on an unnamed peak in the Australian Capital Territory between the Cotter and Gudgenby valleys, in the ranges that the Aborigines called Namadgi. From this peak there is a panoramic view of the region, making it an ideal place for the *wahu* ceremony in which the initiate's territory was pointed out. Further south a similar stone arrangement lies on a saddle west of Sentry Box Hill. From there one can see Mount Jagungal, Mount Kosciusko and most of the Snowy Mountains. These ceremonial sites are in such remote valleys or so high on the mountains that they have survived the impact of European settlement. The moth hunters themselves were less fortunate. By the 1870s nobody was feasting on moths or learning of Daramulan on remote alpine peaks.

The highlands are not generally a favourable environment for hunter-gatherers, but the whole region was used. In this rugged mountain country, Aboriginal people evolved a way of life that enabled them both to survive the bitter winters and come together for great ceremonial gatherings each summer. When and how they began moth hunting is unknown, but stone arrangements on remote alpine peaks still testify silently to the rich ceremonial life made possible by migrations of small, brown Bogong moths.

