

A PRELIMINARY ASSESSMENT OF ANANGU KNOWLEDGE OF CENTRAL AUSTRALIAN INVERTEBRATES

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Abstract

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There is a growing recognition that the knowledge of indigenous peoples can be invaluable in ecological studies and environmental management. While there is now an expanding literature recording indigenous ecological knowledge, most of it focuses on indigenous knowledge of flora and vertebrate fauna, with only passing references to invertebrate fauna. This has also been true in Central Australia, where important recent studies of Aboriginal ecological knowledge have focussed on the relationships between vertebrates and flora. There is only fragmented information on Aboriginal knowledge of invertebrates in Central Australia, primarily the use of invertebrates as a food source and linguistic studies that record invertebrate names. A project was initiated with Anangu from the Mutitjulu Community at the Uluru-Kata Tjuta National Park, who speak Pitjantjatjara, to learn about their names for invertebrates, their knowledge on the biology of invertebrates, and their possible use of invertebrates as environmental indicators. The methods adopted in this project are outlined and some preliminary results presented.

Introduction

The existing literature on Aboriginal knowledge of invertebrates suggests that it is restricted to those that are of economic value and to a few invertebrates that are culturally significant, for example in creation stories. Aboriginal knowledge regarding invertebrates is primarily associated with their use as a food resource, especially witjuti (witchetty) and bardi grubs, honey ants, molluscs and honey bees (Campbell, 1926; McKcown, 1944; Bodenheimer, 1951; Tindale, 1966; Calaby, 1971; Tindale, 1981; Devitt, 1989). Often this information is generalised, using a mixture of information from different parts of Australia from Aboriginal tribes of different language groups, and has been gathered without clear scientific identifications of the invertebrates being named or described. This has resulted in the use of a mixture of confusing common names that have been applied nationally: e.g., bardi and witjuti grubs.

From the point of view of western science, invertebrate diversity and abundance suggests that they are a potentially very powerful group of environmental indicators (New, 1995), and it is important to ascertain whether the hunter-gath-

erer societies of arid Australia also attributed environmental values to invertebrates.

A recently initiated survey of invertebrates at Uluru-Kata Tjuta National Park by the Museum of Victoria provided an opportunity to undertake a collaborative project with the traditional owners to record their knowledge of the invertebrate fauna. The Anangu, the traditional owners of this region of the Western Desert, had already been working with scientists and park managers to record their traditional knowledge of plants and vertebrate fauna as part of the long-term sustainable management of the park (Reid et al., 1992; Baker et al., 1993). The Mutitjulu Community, located within Uluru-Kata Tjuta National Park, agreed to share some of their knowledge of invertebrates with the scientists, with a view to preparing a guide to the invertebrates of the park that would demonstrate this aspect of Anangu knowledge of their land and the ways in which they care for their country.

The primary language of Anangu is Pitjantjatjara, which is the language spoken in part of the Western Desert region of Australia and encompassing the Great Victoria Desert, although the languages in the Simpson and Gibson Deserts

(e.g., Ngaanyatjarra, Ngaatjatjarra, Yankunytjatjara, Luritja and Pintubi) belong to the same language group as Pitjantjatjara (Hobson, 1990). A considerable number of invertebrate names had already been recorded in the Pitjantjatjara/Yankunytjatjara to English Dictionary (Goddard, 1992), based on earlier linguistic studies. The project at Uluru provided an opportunity to check some of the terms previously recorded and to clear up some of the ambiguities and uncertainties in Goddard (1992).

The aims of the project are to record Anangu knowledge in three areas: (1) invertebrate names and their cultural classification; (2) observations on the biology of these invertebrates; and (3) information on the ecology of these invertebrates. This paper will focus primarily on the process involved in documenting Anangu information about invertebrates and only a few preliminary results will be presented.

Methodology

The work was undertaken within the lands of the Mutitjulu Community at Uluru. Data recorded was obtained by:

1. showing specimens (whether dead or alive) to Anangu and recording their responses, and
2. walking around with Anangu in the bush and letting them speak about invertebrates of their choosing.

Records were made on audio tape, notes were taken in cross reference to the tapes, and photographs were taken of all invertebrates examined in this way. The intellectual property rights of the Anangu are protected by recognising that all information provided by them remains the property of the Mutitjulu Community and their permission is required for future use. Furthermore, no information recorded will be made public until the Community verifies accuracy and ownership of the information.

The invertebrate research took place over 8.5-day contact sessions in October 1994 and March 1995, and a full day in October 1995. Anangu participants at each session ranged from two to five, in addition to one to two trainee Aboriginal rangers and an interpreter. The sessions were conducted primarily in Pitjantjatjara, with an interpreter. The information was provided by the following members of the Mutitjulu Community: Trigger Derck, Imjuka (Jenny Watson), Mr Jingo, Mary Kayukayu, Alan Kenda, Kata Kura, Edith Richards, Norman Tjakalyiri, Johnny Tjalyiri, Barbara Tjikatu, Daisey Walkabout, Tommy Wangi, Billy Wara, and Witja-

wara (Rosie Curtis). Assistance was provided by the following trainee rangers: Narelle Tjimpuna Ah Chee, Akana Campbell, Nyinku Jingo, and Peter Wilson (Kunmanara).

There are several constraints in documenting Anangu knowledge, and the issues involved were discussed in more detail by Baker et al. (1993) in relation to their work with Anangu on the vertebrate fauna at Uluru. The constraints include the following.

The Tjukurpa

The Tjukurpa is the 'Law' by which Anangu life is governed. It is information that outlines relationships between all plants and animals, their relationship to the land, and their relationship to human beings (Baker et al., 1993). This means that much of the biological or ecological knowledge about the behaviour and distribution of plants and animals is knowledge of the Tjukurpa. There is a wealth of information in the Tjukurpa, but some is public information and some is restricted information. Restricted information is only available to those adults, who according to traditional Law, have the right to know and manage it. In general, information about identification and description (What is it? Where does it live? What does it eat/What eats it?) fall into this category. Questions about relationships and origins may fall into the restricted category (Why is it called this? Why is this the same as? How is this related to that?).

Age, sex and status of informants

While much of the information on the ecology of the land can be obtained from Tjukurpa, some is also accumulated through generations and through personal experience; what Anangu consider to be true is the result of practical personal experience and religious/ceremonial training over their lifetime. Hence older members of the community generally possess greater knowledge than younger members. Some types of knowledge remain in the domain of either male or female members of the community. Hence the amount and level of knowledge that is given may vary considerably depending upon the status of the informants within the community (e.g., deferring to elders; commenting on matters in presence of members of the other sex).

Language

As with all studies involving different languages, there are always the issues involving different dialects, transcribing Pitjantjatjara words into standard phonetically spelt forms,

and filtering information through a non-scientific interpreter. Words can fall from use for some time (months or years) following the death of a person in the community whose name had a similar sound, and another new name will come into use (the Kunmanara factor). It is possible that a particular word will become lost to the language.

Culture

Cultural differences undoubtedly influence the amount of knowledge obtained. Anangu are more willing to give information when working with smaller groups. They do not appreciate aggressive questioning, and the essence of obtaining information is the willingness to spend time with them, to observe, to learn and to respect the knowledge of elders. Our initial approach was based on a fairly standard western scientific one of showing specimens and asking questions, and this often quickly led to boredom. Western scientific classification and principles are irrelevant to Anangu, and they do not view invertebrate information with the cause-effect principles of western science; Anangu are very firm in that the knowledge they possess is certain and correct, often as a result of Tjukurpa.

Results and discussion

Previous studies on plants and vertebrates indicate that the extent of accurate botanical and zoological knowledge possessed by Anangu is formidable. It is based on pragmatic observations. While the known number of invertebrate words is small (relative to the number of different invertebrates), our preliminary work suggests that their knowledge in this area is much greater than previously assumed.

Pitjantjatjara invertebrate names

The first observation about Pitjantjatjara invertebrate names is that there is no general term for invertebrates or insects. To indicate invertebrates as a group, reference is made by listing several of them (e.g., flies, ants, butterflies, spiders, snails, etc).

The Pitjantjatjara/English Dictionary (Godard, 1992) has the following number of invertebrate words: adult stages (45 names), immature stages (13), insect galls (6), psyllid lerps (1), scale insects (2), silken webs or bag moths (2), termite nests (2), and honey ants (4–6). With the adult names, most correspond to the ordinal level or above. There are three names that are applied to invertebrates from different orders: wanka

(spiders and silk-spinning caterpillars), kawalpa (stick insects and mantids) and mirin-mirinpa (crickets and cicadas). There is a small number of general names for some invertebrate groups such as wanka (spiders), mutu-mutu (beetles), minga (ants) and maku (edible grubs). So far, thirteen names for immature insects are known, and 10 refer to edible grubs belonging to either the Coleoptera (beetles) or Lepidoptera (moths). There are undoubtedly many more Anangu names for invertebrates. In our brief work so far, at least seven previously unknown names have been recorded. Some invertebrates simply do not have a name — and this is clearly stated by Anangu on several occasions when specimens were shown to them.

Patterns of classification approaching a western scientific perspective was as interesting as it was frustrating, knowing that the Anangu basis for naming (and relationships between the taxa) may reside in the Tjukurpa and may never be revealed to science. Some of the more obvious classificatory ingredients include:

1. Shape: e.g., kawalpa (stick insect and mantid);
2. Sound: e.g., mirin-mirinpa (cricket/cicada);
3. Products: e.g., silk production (wanka);
4. Utility value: more invertebrate groups have general names (e.g., ants = minga), but those of greater economic value or ones with nasty bites or stings (e.g., bulldog ants) may have specific names. In the case of honey ants (tjala), there are names for different life history stages, workers and repletes; and
5. Identifiable tracks and traces: while no invertebrate names can be directly attributed to tracks or traces (with the exceptions of galls and lerps), it is possible that those that make characteristic tracks in the sand will be named because of the importance of tracks in the eyes of Anangu.

The closest to a western scientific binomial classification system is the naming of edible grubs. 'Maku' is the generic term for edible grubs, but different types of maku are sometimes indicated by the use of the name of the plant, e.g., maku lunki from *Acacia kempeana* and maku punti from *Cassia*. There are at least two different types of maku from the River Red Gum; those found in the roots are maku ungan-gungu while those in the trunks or branches are maku ilytjaliṭi or maku palkapiti. At least 24 plant species in central Australia harbour maku (Latz, 1995), so there could be at least 24 different maku names. It is interesting to note that there is no corresponding number of names for

adults of maku. Similarly, for example, adult Lepidoptera were of little interest to the Tzeltal Indians of South America (Hunn, 1982), yet their larvae, which were important as food or as pests of crops, were carefully sorted into 16 terminal folk taxa.

Anangu biological observations

Anangu possess a great knowledge of invertebrate tracks and traces, even of invertebrates that were not of economic value to them. The hunting behaviour of wolf spiders, the web building behaviour of argiopid spiders, the foraging behaviour of centipedes and scorpions are all well known to many Anangu. The builders of various burrows are known, as well as the structure of the burrow systems and location of the animals within the burrows is usually known.

One interesting observation is the Anangu knowledge of different life history stages of invertebrates. The existence of the egg stage is often not acknowledged and live birth is invoked for a large number of invertebrates. There is also a lack of recognition of metamorphosis; small grubs grow into big grubs, and small beetles grow into bigger beetles. The presence of mating pairs of insects (smaller males) is interpreted as the mother transporting the young on her back. This is an area of great confusion, and even the Pitjantjatjara verbs that describe metamorphosis (Goddard, 1992) give conflicting messages such as 'turn into immature moth,' 'burst out of cocoon case and is a young moth' and 'the grub gets bigger and becomes a fully developed grub.'

Anangu certainly possess a greater knowledge on the biology and behaviour of invertebrates of economic use. For example, the larval, worker, replete and empty replete stages of the honey ant have separate names, as well as the entrance and chambers of the nest; there is also the recognition that there is a dominant ant in the colony. In the case of maku such as the witjuti grub, it is acknowledged that the grub turns into a 'moth' or 'butterfly'.

Habitat preferences

While work so far has concentrated on obtaining information on the Pitjantjatjara names and the biology of the named invertebrates, it is apparent that Anangu possess a wealth of information on the habitat preferences. During the discussion sessions with Anangu, reference was made to the occurrence of particular invertebrates in relation to fire. This knowledge is of major importance in learning about the land, but as with western science, we first have to

know what the animal is before we can study it in detail.

Conclusions

Several questions arise from this study in terms of its scientific value. We are making a mistake if we strictly compare indigenous knowledge or folk classification with western taxonomy and systematics. Indigenous knowledge is more akin to excellent field naturalist or field biologist information, and this is entirely to be expected because Anangu have grown up on the land and learn this information as part of their upbringing.

So what is the relationship between Anangu names and the biological classification of western science? Is there a one to one correspondence (and at what level?), or is there under differentiation or over differentiation (are Anangu 'lumpers' or 'splitters'?). The preliminary answer to this question is that Anangu primarily name invertebrates in accordance with their need to do so. Some invertebrates simply do not have names, others have very general names, while those of greater economic value have detailed names for the life history stages. This finding parallels similar studies of indigenous knowledge of invertebrates conducted elsewhere (Meyer-Rochow, 1975; Sillitoe, 1995).

One issue that scientists need to consider is the treatment of information that we consider to be scientifically incorrect. How do you treat names that do not correspond with biologically valid categories? It is important that indigenous knowledge is recorded accurately, and it is up to scientists to determine why some of these indigenous interpretations have arisen. The moral dilemma is whether scientists should see the information transfer as a one way or two way process. In a couple of instances when Anangu were given scientific information, their reactions varied from one of interest (and 'how did you learn to obtain such information?') to derision ('you don't know what you are talking about!').

These observations are preliminary, but indications are that there is a vast area of Anangu knowledge on the invertebrates. As long as differences with Anangu and scientific approaches to invertebrates are recognised, then there is much to be gained from Anangu that could be very important in the long-term sustainable management of the arid Centre. In terms of the learning process, it is important that Anangu teach us in their own way in their own land. A

comment made by a senior man quoted by Baker et al. (1993) provides a succinct summary of the situation:

'I can't properly talk about the country, teach about the country unless I am in it, walking on it, touching it, looking at it.'

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References

- Baker, L., Woenne-Green, S. And the Mutitjulu Community, 1993. Anangu knowledge of vertebrates and the environment. Pp. 79-32 in: Reid, J.R.W., Kerle, J.A. & Morton, S.R. (eds), *Uluru fauna: the distribution and abundance of vertebrate fauna of Uluru (Ayers Rock-Mount Olga) National Park, N.T.* Australian National Parks and Wildlife Service: Canberra.
- Bodenheimer, F.S., 1951. *Insects As human food*. Dr. W. Junk: The Hague.
- Calaby, J.H., 1971. Man, fauna, and climate in Aboriginal Australia. Pp. 80-93 in: Mulvaney, D.J. and Golson, J. (eds), *Aboriginal man and environment in Australia*. Australian National University Press: Canberra.
- Campbell, T.G., 1926. Insect foods of the Aborigines. *Australian Museum Magazine* 2: 407-410.
- Devitt, J., 1989. Honeyants: a desert delicacy. *Australian Natural History* 22: 588-595.
- Goddard, C., (compiler), 1992. *Pitjantjatjara/Yankunytjatjara to English Dictionary*. Institute for Aboriginal Development: Alice Springs.
- Hobson, J., 1990. *Current distribution of central Australian languages*. Institute for Aboriginal Development: Alice Springs.
- Hunn, E.S., 1982. The utilitarian factor in folk biological classification. *American Anthropologist* 84: 830-847.
- Latz, P., 1995. *Bushfires & bushtucker: aboriginal plant use in central Australia*. IAD Press: Alice Springs.
- McKeown, K.C., 1944. *Insect wonders of Australia*. Angus and Robertson: Sydney.
- Meyer-Rochow, V.B., 1975. Local taxonomy and terminology for some terrestrial arthropods in five different ethnic groups of Papua New Guinea and Central Australia. *Journal of the Royal Society of Western Australia* 58: 15-30.
- New, T.R., 1995. *Introduction to invertebrate conservation biology*. Oxford University Press: Oxford.
- Reid, J., Baker, L., Morton, S.R. and Mutitjulu Community, 1992. Traditional knowledge and ecological survey equals better land management. *Search* 23: 249-251.
- Sillitoe, P., 1995. Ethnoscience observations on entomology and mycology in the Southern Highlands of Papua New Guinea. *Science in New Guinea* 21: 3-26.
- Tindale, N.B., 1966. Insects as food for the Australian aborigines. *Australian Natural History* 15: 179-183.
- Tindale, N.B. 1981. Desert aborigines and the southern coastal peoples: Some comparisons. Pp. 1853-1884 in: Keast, A. (ed), *Ecological biogeography of Australia*. Dr. W. Junk: The Hague.