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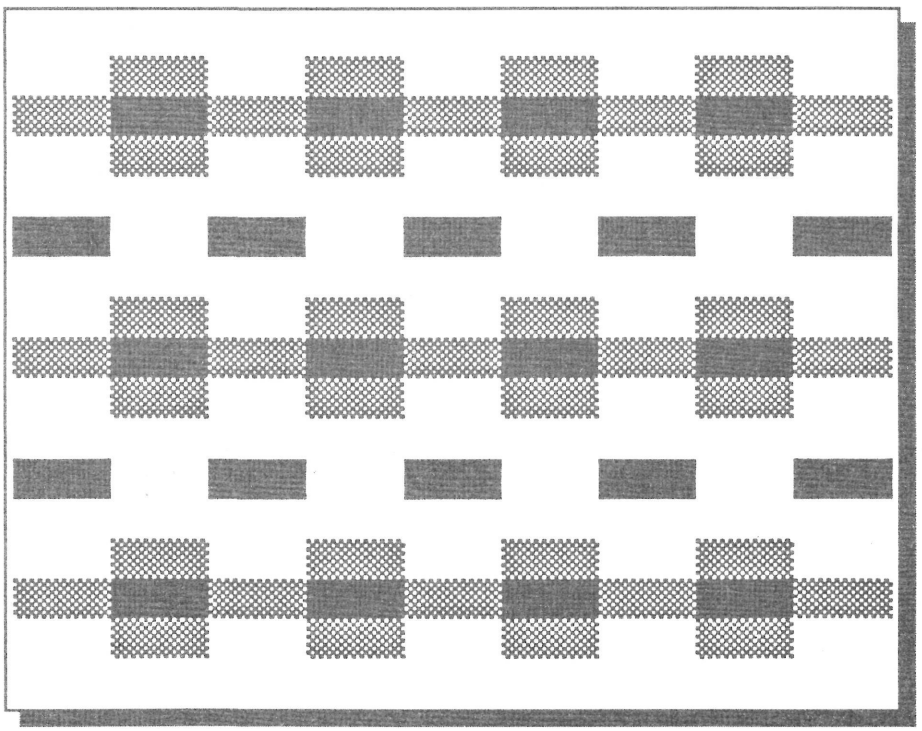

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AMERINDIAN HONEY HUNTING AND HIVE BEEKEEPING

By Eva Crane

Honey-storing Bees

Long before man was present and made use of honey-storing bees, these lived in most of the world's tropical and temperate regions. 'True' honey bees (*Apis*) were found only in the Old World, whereas stingless bees (Meliponinae) were found in the tropics of all continents, several hundred species in all. Amerindians of the tropics thus had access to nests of many species of honey-storing bees, whereas those in temperate North America had none until settlers from Europe introduced honey bees (*Apis*) about 1620.

Stingless bees in the genus *Melipona* are found only in the Americas; they tend to have a relatively large-sized body (a few are as large as European honey bees), and where they occurred they were often the most frequently used by man. Species in the genus *Trigona* occur throughout the world's tropics; many are smaller, some only 2 mm long. All stingless bees in the Americas build a nest in a cavity, often in a lateral branch of a tree, underground or in a termite nest. Inside the nest, they store honey on each side of the central part where the brood is reared, in wax 'honey pots' — not in parallel vertical combs as honey bees do. Hunter-gatherer peoples ate honey for its sweetness, and brood (larvae and pupae) as a substitute for meat, especially when this was scarce.

Stingless bees produce no venom, and cannot sting. To defend their nests, they bite, ejecting a caustic fluid, or irritate by crawling into eyes, ears, etc.

Table 1 lists some species in the Americas which build large nests and are known to have been kept in hives in early and/or recent times. Amerindian peoples would almost certainly have hunted nests of these species, among others, to harvest honey. Honey was especially needed by some groups for making an alcoholic drink, and beeswax by others for producing fine gold ornaments using the lost-wax process. Such uses of honey and wax will be dealt with in a separate paper (Crane 1999*b*).

In parts of the South American tropics (only) there were also a number of species of honey-storing wasps, especially in the genus *Brachygastra*, from which Amerindians collected both honey and brood to eat; the nests contained no wax since wasps do not secrete it.

Hunting Wild Nests of Stingless Bees

The term 'honey hunting' is preferred to the less active 'honey collection' for the most primitive use of wild nests, because locating the nests and then reaching them required a large part of the total skill and effort. Table 2 lists some Amerindian peoples known to have hunted nests of stingless bees; see Crane for details and references to original records (1999*a*, Sections 11.2, 11.4, 17.22).

Central America

The present limit of stingless bees is in Sonora just north of Mesoamerica (Figure 1), and Amerindians migrating from the north would have first encountered them there or in what is now Mexico (Crane 1999*a*, Section 6.1). We know little about Amerindians' use of wild nests in Mesoamerica because the bees were kept in hives even in Ancient times; see below. However, some records from Spanish writers in the 1500s survive (Crane 1999*a*, Section 11.2). For instance in 1580 the Acaxee on the west coast of Mexico — who did not keep bees in hives — were skilled in getting honey from nests which contained 'wax pots as large as dove's eggs'. Honey hunters watched for bees collecting water and followed them back to the nest (Bennett 1964), using methods such as Columella had described in Roman times. Among the Chorti in Guatemala, honey hunting seems to have been more important than beekeeping even in the 1900s (Wisdom 1940).

In Central America outside Mesoamerica, most of the honey and wax was obtained from wild nests. Crane (1999*a*, Section 11.3) refers to several peoples who did this: in the Sonora region in the 1790s; in Honduras in 1972; the Miskito in Nicaragua in 1984; the Talamanca in Costa Rica, and Guaymi-speaking people in Panama in 1984.

Not many Caribbean islands had stingless bees, but in 1492 Columbus noted 'a variety of wild honey' as one of the natural assets of Cuba, and on a later voyage he obtained wax in Santo Domingo (Crane 1999*a*, Section 11.3). So Amerindian peoples on both these islands harvested from stingless bee nests.

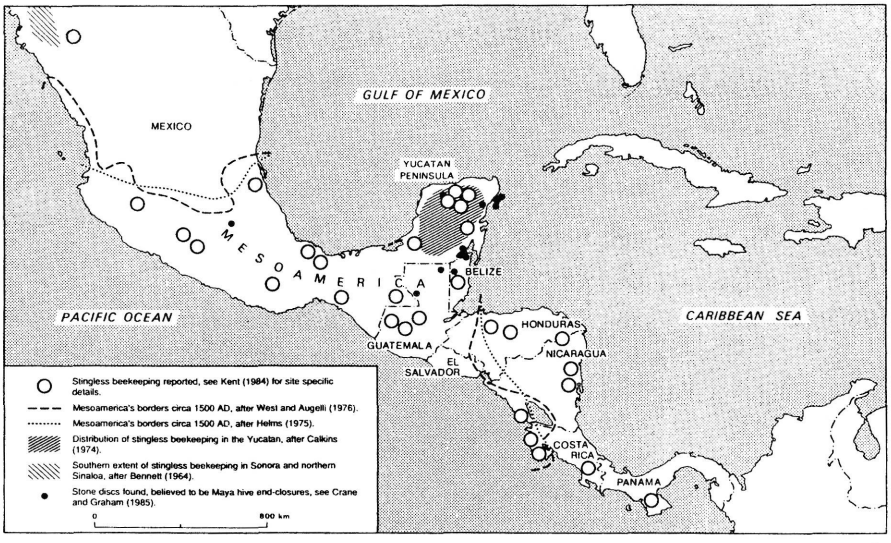

Figure 1. Map relating to beekeeping with stingless bees in Mesoamerica, with names of present countries (prepared by R.B. Kent) . In the key, references to Crane & Graham,Helms, and West and Augelli, are 5, 16a and 32a, respectively, in Crane (1992).

South America

There is a wealth of information about the use of bees' nests by Amerindian peoples in the tropics of South America, and detailed field studies made in the 1900s suggest that certain peoples acquired an intimate knowledge of the stingless bees in their area. Extracts from a few reports are quoted here, and Crane (1999*a*, Section 11.43) gives many others.

Ulrich Schmidel (1599) described the Macasis as they were around the 1540s.

> An Indian goes into the woods with an axe, and the first tree he comes to has an entrance hole to a bees' nest. By boring other holes he gets 5 or 6 jugs full of pure honey. These bees are small and have no sting; their honey can be eaten with bread or other food, and a very good mead can be made from it, which is even better than mead made here in Germany.

Another German soldier, Hans Staden, held in captivity by the Tupí in Brazil, said in 1555 that when these people took honey from a nest, bees often flew on them 'so that they were forced to brush them from their naked bodies'.

Father José de Acosta, a Spaniard who travelled in many parts of Bolivia and Peru in 1572, was given dark acid honey from bees that were small, like gnats, and lived in trees or underground — 'not in hives as in Castile'. Other writers mentioned gifts of honey, and the sale of wax 'which in Venezuela was always black'.

Reports were made from a number of areas during the 1600s and 1700s, and by the 1800s also about different species of stingless bees. By then some peoples harvested honey in a more systematic way, and methods were also better described by observers. Goudot (1846) explained the seasonal cycle of honey storage by these bees. He said that in New Granada (Colombia) honey-hunting parties collected honey and wax in April/May and in October; a nest might yield 3 litres of honey and 1 kg of wax. There, as in many other places, a tree was usually felled to get at a nest. The honey was sometimes sold at the market in Bogotá, packed in bamboo internodes.

Among the Chiquito in Bolivia around 1840, nests were hunted for their honey from June to September by organized groups of 10 to 20 men. They searched through the forest and felled any tree containing a nest; they often took home the part containing a nest, to use as a hive. Honey was plentiful in houses everywhere, and wax was paid as a state tax (Bodenheimer 1951). Ruddle (1973) studied the Yukpa, a Carib people on the Venezuela-Colombia border. They also felled trees to get at nests, for instance of *Trigona* (*Tetragona*) *clavipes*. The Tupí-Cawahib, remnants of an ancient Tupí people in the south of the Amazon basin, killed bees before taking their honey by closing the nest entrance with a pad of leaves from an unidentified tree (Steward 1963). Métraux (1963) said that the Guana blew smoke from a *Datura* plant (which was probably toxic) into the nest cavity before taking the honey.

In Rio Grande do Norte in northern Brazil, around the 1870s one landowner hollowed out his larger papaya trees and established and tended nests of *Melipona fasciata scutellaris*. The Brunel in Bahia tended nine species of stingless bees in tree cavities; they made a hole near the part of the nest where the honey was stored, and kept it covered except at harvest time (Schwarz 1948). The Mataco of Gran Chaco (below) had a strong taboo against destroying bees, and after harvesting the honey they remade the nest cavity in the tree or earth where it was found (Alvarsson 1988). Crane (1999*a*, Section 17.22) gives a few other examples.

Three Amerindian peoples whose honey hunting has been studied in some detail are especially notable for their dependence on stingless bees, or their great knowledge of the bees: the Guayaki, Mataco and Kayapó (Crane

1999*a*, Section 11.43). The authors cited below give full information. There may well be other such peoples, who either did not survive into the late 1900s or have not yet been studied.

The Guayaki, nomadic hunter-gatherers in Paraguay, reached nests by using a 10-m rope made of plant fibres mixed with human and animal hair. Sometimes they bent two young trees into an arch and supported a seat from them, level with the nest to be harvested (Steward 1963). They did not cultivate the land or make dug-out canoes, and Nordenskiöld thought that their stone axe was used primarily for gaining access to bees' nests; the axe was carried up the tree on a leather thong attached to the wrist. They stored and transported honey (most of it from *Melipona* species) in large basket-jars that had been made impermeable by a thick lining of beeswax. These people were studied by Nordenskiöld (1929*a*, 1929*b*), and were the subject of Vellard's 1939 book *Une civilisation du miel.*

The Mataco live in the Gran Chaco, a vast open dry plain which also includes dry forests, stretching across parts of Paraguay, Argentina and Bolivia. Honey hunting was very important to them, and honey was one of their main foods. Alvarsson spent six years with them, and made a detailed study of their honey hunting (1988). They could distinguish 19 kinds of stingless bees and their individual honey types, and they knew when the nests of any species would be likely to contain honey and/or brood. They located a nest by watching or listening for flying bees, or by following a bee seen collecting water. (According to Métraux (1963) the Abipón in Gran Chaco plucked their eyelashes to improve their vision for this purpose.) The Mataco remade most bees' nests after harvesting from them, but knocked or tore down a nest suspended in the open. When obtaining honey from one particular species (*chiguana* in Spanish), a hunter used smoke and protected his head by pulling over it the string bag that he commonly carried, but no protection was worn when working at other nests.

The Kayapó, of whom very few now exist, lived south of the Amazon in Brazil, near Rio Xingú. Gê-speaking Kayapó deliberately left the brood and some honey in the nests after harvesting from them — 'for Bep-Kororobi, a powerful shaman who was taken into the sky in a flash of lightning.' Experts among these people in a reserve in parts of the states of Pará and Mato Grosso could identify 54 kinds of stingless bees, as well as European and Africanized honey bees, *Apis mellifera* (Posey 1983).

Keeping Stingless Bees in Hives

Table 1 lists some stingless bees known to have been kept in hives on the American mainland at some period. Most of the species live in Brazil, which has at least 260 species altogether. Of the other countries in the Table, all or part of Costa Rica, El Salvador, Honduras and Mexico are in Mesoamerica (Figure 1).

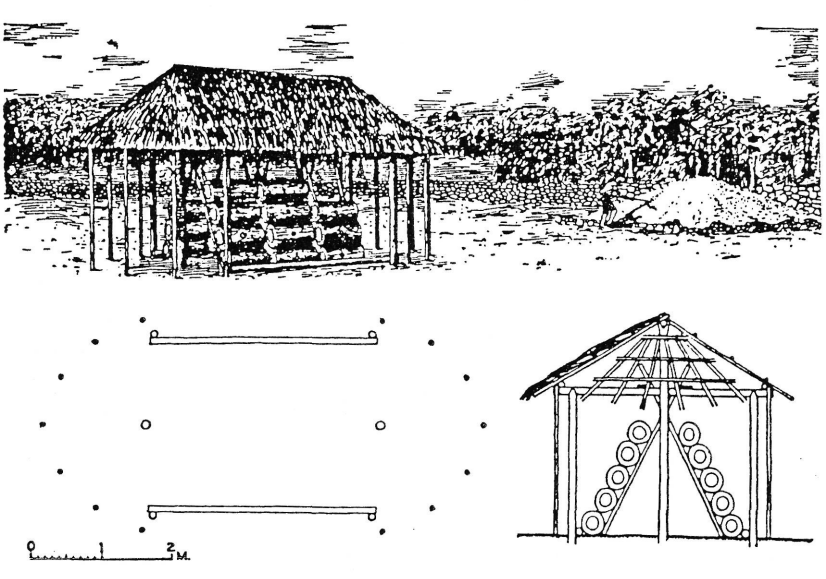

Figure 2. A-rack with log hives under a thatched shelter, Yucatan, 1920s (Wauchope, 1938). Drawing of shelter, also plan and elevation.

Mesoamerica

The stingless bee *Melipona beecheii*, which is productive and also very well suited for keeping in hives, was present from Mexico to Costa Rica (Roubik 1990), roughly the extent of Mesoamerica. In Yucatán the Maya kept these bees (*colecab*) in hives at least from the Late Preclassic period of the Maya civilization, which started about 300 BC. It reached a higher level than anywhere else in the world, and the Maya influence on beekeeping is still apparent in Yucatán and other parts of Mesoamerica.

The usual Maya hive was — and is — a hollowed horizontal log, closed at each end by a disc of wood or soft stone, cut to fit. In recent times hives have been arranged on an A-shaped rack under a shelter in the open, as

in Figure 2. Except where stone end-closures were used, all components of the hives and shelters were biodegradable. Figure 1 shows 12 sites where stone end-closures have been excavated, similar to those in use today (e.g. Freidel 1976). It also shows where Kent (1984) found similar beekeeping still being practised. The 12 sites were dated to all Maya periods from Late Preclassic to Late Postclassic. Table 30.2A in Crane (1999*a*) lists them, and the number of discs found at each: 255 on Cozumel and nearly 200 in the Yucatán peninsula. In an excavation at Buena Vista in Cozumel (site 2), D. A. Phillips found 12 discs which could be matched in pairs for size and shape, each pair being separated by about 50 cm, the usual length of a log hive today (Wallace 1978). He therefore suggested that they were the remains of an apiary, possibly such as that in Figure 2.

Figure 3 shows a fired clay censer in the form of an effigy of the Maya bee god Ah Mucan Cab, including (centre right) two of the hives — each with a central flight entrance and end-closures — and also, between the hands of Ah Mucan Cab, a cluster of honey cells such as would exist in a hive. The censer, found on Cozumel, is dated to about 1450.

The Spanish wrote many accounts of Maya beekeeping, and in 1995 Brunius quoted a number of them in this journal, so they are not dealt with in detail here. Cappas e Sousa (1995/1998) copied many bee-related illustrations from the Codex Tro-Cortesianus and commented on them.

Figure 3. Incense censer from Cozumel in the shape of the Maya bee god Ah Mucan Cab, c. 1450, in the Archaeological Museum of Yucatan, Mérida (Darchen & Darchen, 1978). See text.

In Mesoamerica beyond Yucatán, Spanish records from the 1500s suggest that stingless bees were kept in hives in Jalisco province west of Mexico City and in the Balsas river basin (Guerrero). They also gave direct information about similar beekeeping in the southern extremity of Mesoamerica, the Nicoya peninsula of Costa Rica, and the writer saw it still being done there in 1991. Further records about hives or beekeeping are found from the 1800s or 1900s (Crane 1999*a*, Section 30.3). In view of the close similarities between methods in the Yucatán in the 1500s and the 1900s, and between Yucatán methods and those in some other parts of Mesoamerica, it seems likely that beekeeping outside Yucatán was learned from the Maya at some earlier time.

The Aztec civilization occupied highlands where the climate was too cool for stingless bees. However, large amounts of honey were obtained as tribute from peoples in the Balsas River basin (Crane 1999*a*, Section 30.3).

Outside Mesoamerica

Table 2 lists some Amerindian peoples who kept stingless bees in hives; Crane gives further information and references to original reports (1999*a*, Sections 30.3–30.5). Records suggest that the beekeeping — except with *Melipona beecheii* in Mesoamerica — was rather sporadic and lacked a cultural unifying factor. Hives were usually logs taken home with nests in them, and this type of beekeeping probably originated in many places. Some peoples, for instance the Paressi in Brazil, used calabashes as hives.

Nordenskiöld (1929*b*) said that there was 'conclusive evidence of beekeeping having been unknown' in the Inca kingdom which occupied cool highlands in Peru.

Impact of Introduced Honey Bees

Honey bees (*Apis mellifera*) were taken from northern Europe to both the North American mainland and the Caribbean islands in the 1600s, and to South America in the 1800s (Crane 1999*a*, Section 36.2). Temperate-zone North America provided ample bee forage, and also cavities in large trees suitable for nest sites, so the bees spread rapidly by swarming and often arrived in an area in advance of the European settlers. Thomas Jefferson, who later became President of the United States, wrote in 1788: 'The bees have generally extended themselves into the country a little in advance of the settlers. The Indians, therefore, call them the white man's fly, and consider their approach as indicating the approach of the settlement of the whites.'

Use of wild nests

There is rather little evidence that Amerindians in North America harvested honey and wax from honey bee nests. However, in Wisconsin they managed land as prairies, burning off the grass and undergrowth, and many surviving trees had cavities in which bees could nest. Some Amerindians there were occupied with honey hunting, and were expert at finding nests (Gojmerac 1990; Crane 1999*a*, Section 12.21).

Gilmore (1963), writing on ethnozoology in South America, said that the honey bee was 'feral in many places, where its nests in trees are exploited, as are those of native species. Its light honey sharply contrasts with the dark "strong" product of the stingless species'. Hill *et al.* (1984) investigated the food of a group of Ache, hunter-gatherers in eastern Paraguay. Much of it was collected in the forest, and honey comprised from 0.4% to 44% of the total on any one day. Much more of the honey came from honey bees than from stingless bees. In Argentina the Toba felled a tree after smoking a honey bee nest in it (Woodward 1993), and both honey and brood combs were eaten while they were still warm.

Use of hives

It seems that, in general, settlers in North America and their descendants were usually the people who kept European honey bees in hives. But there is a reference to hive beekeeping by Amerindians in 1793. On June 27 Brother David Zeisberger of the Moravian Settlement of 'Delaware Indians' in Fairfield — now in Kent County, Ontario — reported the arrival of two hives of bees brought by an 'Indian' known as Peter, Chief Echpalawchund, from a Moravian Mission in Ohio (Crane 1999*a*, Section 31.23).

In Mesoamerica, when hives of European honey bees were first brought to the Yucatán village of Yaxcabá, people who saw the large size of the bees and their colonies were convinced that these bees were the gods of their own stingless bees *colecab* (Weaver & Weaver 1981).

References

Alvarsson, J-Å.

—1988, *The Mataco of the Gran Chaco.* Stockholm: Almqvist & Wiksell International.

Bennett, C. P.

—1964, Stingless-bee beekeeping in western Mexico. *Geographical Review.* 51(1):85–92.

Bodenheimer, F. S.
—1951, *Insects as Human Food: A Chapter in the Ecology of Man.* The Hague: W. Junk.
Brunius, S.
—1995, Facts and thoughts about past and present Maya traditional apiculture. *Acta Americana.* 3(1):5–30.
Cappas e Sousa
—1995/1998, Os Maias e a meliponicultura. *Apicultor.* 3(9):15–17, (10):111–112; 4(11):17–19, (12):17–20, (14):13–16; 5(15):33-35, (16):23-27; 6(19):15-20, (20):15-21.
Crane, E.
—1992, The past and present status of beekeeping with stingless bees. *Bee World.* 73(1):29–42.
—1999*a*, *The World History of Beekeeping and Honey Hunting.* London: Duckworth.
—1999*b*, *Honey and wax from bees in the life of Amerindian peoples.* In preparation.
Darchen, B. & R. Darchen
—1978, Le comportement constructeur des abeilles sociales. *Courrier du Centre Nationale de la Recherche agronomique* No. 30:38–45.
Freidel, D. A.
—1976, Late Postclassic settlement patterns on Cozumel Island, Quintana Roo, Mexico. Harvard University: Ph.D. dissertation.
Gilmore
—1963. *see* Steward 1963.
Gojmerac, W. L.
—1990, Personal communication.
Goudot, J.
—1846, Observations relatives à l'histoire des méliponites. *Comptes rendus de l'Académie des Sciences, Paris.* 22:710–713.
Hill, K., K. Hawkes, & H. Hurrado M. de Kaeplan
—1984, Seasonal variance in the diet of Ache hunter-gatherers in eastern Paraguay. *Human Ecology.* 12(2):101-135.
Kent, R. B.
—1984, Mesoamerican stingless beekeeping. *Journal of cultural Geography.* 4(2):14–28.
Métraux, A.
—1963. see Steward 1963.
Nordenskiöld, E.
—1929*a*, L'apiculture en Amérique. *Anthropologie.* 39:285–286.
—1929*b*, L'apiculture indienne. *Journal de la Société des Américanistes, Paris, n.s.* 21:169–182.

Posey, D. A.
—1983, Keeping of stingless bees by the Kayapó Indians of Brazil. *Journal of Ethnobotany*. 3(1):63–73.
Roubik, D. W.
—1990, Biogeographical ecology of *Melipona* (Apidae, Meliponinae). *Proceedings 11 International Congress International Union for the Study of Social Insects*: 579–580.
Ruddle, K.
—1973, The human use of insects: examples from Yukpa. *Biotropica*. 5(2):94–101.
Schmidel, U.
—1599, *Viaje al Río de la Plata*. Nuremberg.
Schwarz, H. F.
—1948, Stingless bees (Meliponidae) of the Western Hemisphere. *Bulletin of the American Museum of natural History*. No. 90.
Steward, J. H. (ed)
—1963, *Handbook of South American Indians*. New York: Cooper Square Publishers.
Vellard, J.
—1939, *Une civilisation du miel: les Indiens guayakis du Paraguay*. Paris: Librairie Gallimard.
Wallace, H.
—1978, The strange case of the panucho plugs: evidence of pre-Columbian apiculture on Cozumel. University of Arizona: paper released for use in 1985.
Wauchope
—1938, *see* Wallace 1978.
Weaver, N. & E. C. Weaver
—1981, Beekeeping with the stingless bee *Melipona beecheii*, by the Yucatecan Maya. *Bee World*. 62(1):7–19.
Wisdom, C.
—1940, *The Chorti Indians of Guatemala*. Chicago.
Woodward, A. J.
—1993, Personal communication.

Table 1
Stingless bees (Meliponinae) kept in hives in the American tropics

Brazil:	Costa Rica:
Melipona atratula	*Melipona fulginosa* (= *flavipennis*)
M. fasciata rufiventris	*Trigona* (*Cephalotrigona*) *capitata*
M. quadrifasciata	*T.* (*Trigona*) *corvina*
M. schencki picadensis	
M. schencki schencki	Costa Rica to Mexico:
M. scutellaris	*Melipona beecheii*
M. seminigra merrillae	*M. fasciata*
Trigona (*Cephalotrigona*) *capitata*	
T. (*Oxytrigona*) *tataira*	Mexico:
T. (*Scaptotrigona*) *postica*	*Melipona fasciata*
T. (*Scaptogrigona*) *tubiba*	*Trigona* (*Cephalotrigona*) *capitata*
T. (*Tetragona*) *clavipes*	*T.* (*Partamona*) *cupira*
T. (*Tetragona*) *mombuca*	
	Panama:
	Melipona fasciata

Based on Crane, 1999a, Table 30.1A

Table 2
Amerindian peoples who obtained honey and wax from stingless bees

Hh honey hunting; Hh+ some advance beyond this; Bk hive beekeeping
In column 1, brackets indicate a geographical area

People	Country	Hh/Bk
Abipón	see Mataco	Hh
Acaxee	Mexico	Hh
Ache	see Mataco	Hh
Akoerio	Surinam	Hh
Apapocúva	Brazil	Bk
Araona	Bolivia	Hh
Ashluslay	see Mataco	Hh
(Asuncion region)	Paraguay	Hh
Atabambi	Brazil	Hh
Aymara	Peru/Bolivia	Hh

Aztec	El Salvador	Bk
(Azuela)	Panama	Bk
(Balsa River basin)	Mexico	Bk
(Bogotá region)	Colombia	Hh
Botocudo	Brazil	Hh
Brunel	Brazil	Hh+
Caingang	Brazil	Hh
Cainguá	Argentina/Paraguay	Hh
Camacan	Brazil	Hh
Caracas	Venezuela	Hh, Bk
Carib	Lesser/Antilles	Hh
Cavinia	Peru	Hh
Chiapas	Paraguay/Argentina	Bk
Chiquito	Bolivia	Hh+
Chorti	Guatemala	Hh, Bk
Erigbaagtsa	Brazil	Hh
Gê	Brazil	Hh+
Guaná	Paraguay	Hh+
Guariní	Brazil	Hh, Bk
Guayaki	Paraguay	Hh+
Guaymi	Panama/Venezuela	Hh
(all peoples)	Guianas	Hh
Jicaque	Honduras	Bk
Kayapó	Brazil	Hh+
(Llanos)	Venezuela	Hh, Bk
Macasis	Argentina	Hh
Makuna	Brazil	Bk
Mataco	Paraguay/ Argentina/Bolivia	Hh+
Maya	Mexico+	Bk
Menimehé	Brazil	Bk
(Meseta Central)	Costa Rica	Bk
Miskito	Nicaragua	Hh+
Mixtec	Mexico	Bk
(Montaña)	Ecuador/Peru	Hh
Paressi	Brazil	Bk
Purí	Brazil	Hh
(Sabará)	Brazil	Bk
(Santa Marta region)	Colombia	Bk
(east of above)	Venezuela	Bk
Talamanca	Costa Rica	Hh
Tapuya	Brazil	Hh
Tarairiu	Brazil	Hh

Guana on p.8

Toba	Argentina/Paraguay	Hh
Tolú	Colombia	Hh
Tucuna	Brazil	Hh
Tupí	Brazil	Hh
Tupí-Cawahib	Brazil	Hh+
Tupí-Guarani	Brazil	Hh
Wayarekule	Surinam	Hh
Yanomamö	Venezuela/Brazil	Hh
Yukpa	Venezuela/Colombia	Hh+

/Dr Eva Crane, OBE, is Honorary Life President of the International Bee Research Association and Scientific Consultant to IBRA Council./