Chapter 7

SOUTH AMERICA: COLOMBIA

Taxonomic Inventory
Taxa and life stages consumed

Coleoptera

Beetles/beetle grubs

Bruchidae (seed beetles)
Caryobruchus sp. (*scheelaea* Bridwell?), larva

Buprestidae (metallic woodborers)
Euchroma gigantea Linnaeus, larva, adult

Cerambycidae (long-horned beetles)
Acrocinus longimanus (Linn.), larva

Curculionidae (weevils, snout beetles)
Anthonomus spp., adults
Rhynchophorus (= Calandra) palmarum Linn., larva

Passalidae (bess beetles)
Passalid sp., larva, adult

Scarabaeidae (scarab beetles)
Ancognatha sp., larva
Megaceras crassum (author?), adult
Podischnus agenor Olivier, larva, adult

Diptera

Stratiomyidae (soldier flies)
Chrysochlorina spp**.,** *larvae*

Hymenoptera

Apidae (honeybees, bumblebees)
Trigona clavipes (author?), larva
Trigona trinidadensis (author?), larva

Formicidae (ants)
Atta cephalotes, Linn., winged female, soldier
Atta laevigata (Smith), winged female, soldier
Atta sexdens Linn., winged female, soldier

Vespidae (wasps, hornets)
Apoica thoracica du Buysson, pupa
Mischocyttarus spp., larvae
Polistes canadensis erythrocephalus Latreille, larva
Polistes pacificus Fabr. (= *pacificus modestus* Smith), larva
Polistes ssp. (author?), larva
Polistes versicolor (Olivier) ssp., larva
Polybia ignobilis (Haliday), larva
Polybia rejecta (Fabr.), pupa
Agelaia (= Stelopolybia) angulata (Fabr.), pupa

Isoptera

Termitidae (termites)
Macrotermes sp., soldier
Syntermes parallelus (author?), soldier, winged female

Syntermes snyderi (author?), soldier, winged female

Lepidoptera

Hesperiidae (skippers)
Hesperid sp., larva

Lacosomidae (sack-bearers)
Lacosomid sp., larva

Noctuidae (noctuids)
Mocis repanda Fabricius, larva
Spodoptera frugiperda J.E. Smith, larva

Notodontidae (prominants)
Notodontid sp., larva

Saturniidae (giant silkworm moths)
Saturniid sp., larva

Neuroptera

Corydalidae (dobsonflies, fishflies)
Corydalus spp., larvae

Orthoptera

Acrididae (short-horned grasshoppers)
Aidemona azteca Saussure, nymph, adult
Orphulella spp., nymphs, adults
Osmilia flavolineata DeGeer, nymph, adult
Osmilia spp., nymphs, adults
Schistocerca spp., nymphs, adults

Romaleidae (lubber grasshoppers)
Tropidacris c. cristata (Linn.) (= *latreillei* (Perty)), nymph, adult

Tettigoniidae (long-horned grasshoppers)
Conocephalus angustifrons Redt, nymph, adult

Trichoptera

Hydropsychidae (net-spinning caddiceflies)
Leptonema spp., larvae

The study by **Ruddle** (**1973**) on food insect use by the Yukpa, a Carib tribe along the Colombia-Venezuela border, is one of the best in depicting the role of insects as food in a pre-industrial culture. The Yukpa are principally "shifting cultivators who operate a variety of partial systems of land use, complemented mainly by hunting, fishing, and gathering activities." He found that insects from seven orders and 22 genera are used, and they are used as a complementary food source throughout the year. Certain insect foods are preferred to fresh meat. According to Ruddle, several of the food insects are crop pests, so additional benefits are achieved through reduced crop losses without the cost and hazards of insecticides. The insect orders drawn upon most heavily by the Yukpa are the Coleoptera, Hymenoptera and Orthoptera. Their use, as described by Ruddle, is summarized under the appropriate orders and families.

According to Ruddle, factors that tend to either increase or decrease food insect utilization by the Yukpa include: a) Increasing acceptance of "wátia" ways, which for example has caused reduced consumption of Yupúna from the maize fields; b) Reduced availability of game as a result of forest destruction. Ruddle states, "Thus, instead of disappearing as an archaic trait under the impact of acculturation, insect harvesting as a complementary food source may have been reinforced by the increased scarcity of larger game." c) A great aversion to consuming the recently introduced domestic animals, most of which the Yukpa regard as pets. While acculturation tends to decrease insect use, the latter two factors tend to increase it. From his excellent study, Ruddle concluded: "Most studies have regarded insect-eating as an archaic trait which is gradually disappearing

owing to the steady encroachment of more modern subsistence systems. Among the Yukpa-Yuko Indians of Venezuela and Colombia, however, insect foods have retained their importance in the less acculturated communities."

Beckerman (**1977**) noted the nutritional importance of the palm weevil, *Rhynchophorus palmarum*, in his study of the use of palms by the Barí Indians, "a small tribe of slash-and-burn cultivators who inhabit the tropical rain forests of the southwestern-most lobe of the Maracaibo basin," a region bisected by the border between Colombia and Venezuela and sometimes called Motilonia. Sweet manioc is cultivated as the major crop, with bananas and several minor crops contributing to the food supply. Cotton is also cultivated. Their food crops and fish, and to a lesser extent, game, yield a diet adequate in protein during most of the year. The Barí also make extensive use of the wild vegetable products of the forest, among which, according to Beckerman, "heart of palm," palm fruits, and palm grubs are important in supplying protein. He states (p. 152): "It is a common practice to cut down *Jessenia* trees and leave the logs lying in the forest. In two or three months the whole trunk is infested with the edible larvae of the palm weevil, *Rhynchophorus palmarum*, which usually attacks only the crown of the tree . . . . Several hundred grams of larvae can be extracted from a single trunk, which is split open with an ax . . . . Only *Jessenia* is used as a 'grub farm' in this way by the Barí, despite the fact that *R. palmarum* will infest at least the crown of a great many other kinds of palms."

Beckerman concluded (p. 153) that:

> In sum, as well as furnishing the Barí with indispensable raw materials like bow wood and matting material, the palms of Motilonia also furnish a protein resource which 'buffers' any vagaries in the supply of meat. While the total amount of palm fruit and grubs eaten is far less than the amount of, say, fish consumed, the availability of the palm protein at times when alternatives are in short supply probably means that the Barí are able to support a larger population year-round than would be the case if they had to rely exclusively on the somewhat seasonal fish catch and the unreliable hunt.

Hugh-Jones (**1979**: 30) reports that for the Barasana, a small Tukanoan sub-group living in the Vaupés River region of Colombia, "A considerable portion of the diet comes from insects and much time is devoted to obtaining these and other gathered foods." While most Barasana food is smoked and/or boiled, insects and small fish are roasted. Among the insects used are caterpillars and pupae, sauba (*Atta* spp.) ants, termites, and beetle larvae (p. 34). Hugh-Jones mentions the use of sauba ants and *meka* (large ground-living termites) in rites and ceremonies of the Barasana (pp. 60, 67, 83-85, 88, 90), and similarly, wasp "eggs" (p. 67). The Barasana terms for insect grubs are *wadoa* and *hiköroa*.

Dufour (**1987**) reported more than 20 species of insects used as food by Tatuyo-speaking Tukanoan Indians in the Vaupés region of southeastern Colombia. The studies were conducted primarily at the village of Yapú. Seasonal differences in rainfall are not well-marked, but the principal rainy season begins in March with maximum rain in July and a second shorter rainy period from September through October. A long slightly drier period extends from November through February with a short one in August. The Tatuyo at Yapú are slash and burn horticulturists, with cassava the principal crop and dietary staple. It is supplemented with a variety of other vegetable foods and with fish, game, and invertebrates. Dufour found that the most important insects in the diet were those which formed large, highly predictable aggregations in nature, and their inclusion in the diet was frequent and inversely related to the consumption of fish and game.

Proximate analyses of several of the insects studied by Dufour are compared to those of fish and tapir (Colombia Table 1; from Dufour's Table 2, p. 390). Energy values for the insects, ranging from 425 to 661 kcal/100g, are all higher than that for the smoke-dried fish (312 kcal/100 g), as is the crude protein content in three of the five insects analyzed. It should be noted in this connection, however, that the smoke-dried, ground fish includes bone and scale material and the protein value is less than that of fileted fish.

Data by Dufour, based on food-intake records for November-January and May-June revealed that, although fish was by far the most frequently consumed animal food, insects were second. Fish appeared in 88% of the diet records of males and 78% of those of females, while insects appeared in 26% of the diet records of males and 32% of those of females. Insects were the only source of animal food in women's diets on five of the 40 days (12%) for which records were kept. Game appeared in 24% of the diet records of men and only 21% of the records for women. Fish also contributed most of the animal protein in the diet (Colombia Table 2; from Dufour's Table 4, p. 391), but insects contributed 12% of the animal protein in men's diets and 26% in women's diets during the May-June period. Insects also contributed significant amounts of fat to the diet, 18% and 20%, respectively, for men and women in May-June, and 23% and 7%, respectively, in November-January.

Regarding which insects were collected by which family members, Dufour states (p. 388): "Adult men collected insect species which required felling trees (wasp brood), and splitting open felled logs (*Rhynchophorus*

larvae). Men, women, and older children collected Lepidoptera and Coleoptera larvae (other than *Rhynchophorus*), and the alates of *Atta* and *Syntermes*. Women were responsible for collecting all of the ant and termite soldiers. Because this kind of collecting occurred throughout the year and was relatively time consuming, women probably devoted more time to insect collection than did men or children."

Dufour presents tabular data on seasonal availability of the edible species studied (her Table 1), their weight, and "acquisition rate" in grams/hour (maximum per person per attempt). All of the Coleoptera were non-seasonal in availability. Seasonal availability of *Atta* ants was non-seasonal for soldiers, early to mid rainy season for alates. Wasp brood (family Vespidae) was non-seasonal. Seasonal availability of termite soldiers and alates was the same as that for *Atta* ants. Among the Lepidoptera, the hesperiid larva is non-seasonal, the lacosomid larva is available for 1-2 weeks during the long rainy season, the noctuid larva (*batia*) for 1-2 weeks during the short dry season to the beginning of the short rainy season, and the notodontid larva for 1-2 weeks at the beginning of the short rainy season. The live weight of *batia* is given as 4.0g, and the quantities of this species collected in August and September were impressive.

Dufour states (p. 392) that:

> Informants could name more edible insect species than were actually observed and collected during the field study. They can, for example, readily name at least 8 varieties of edible wasps, and more than 10 varieties of edible ants [compared to 3 species of each observed by Dufour]. There are several factors that may account for the discrepancy in number between the observed and enumerated varieties. First, the data on insect collection derived from harvest records included only the material brought back to the village and therefore underrecorded the use of insects which were typically consumed as they were collected. This was usually the case with the larvae of woodboring beetles. Furthermore, it is assumed that some of the insect material actually brought back to the village went unnoticed because it came in small packages at odd times of the day, or was effectively hidden. The latter sometimes occurred with prized foods, especially small quantities of *Rhynchophorus* larvae. The diet records provided a very accurate account of insect use, but for only a limited number of days.
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> Second, the period of observation may have been inadequate to record all varieties of insects that are harvested opportunistically, such as wasps, or only collected under certain social circumstances. An example of the latter was the unidentified lemon-flavored ant that was collected for use as a condiment when salt was tabooed. Third, not all varieties recognized as edible were found within the usual resource area exploited for insect fauna. Foraging for insects was usually restricted to an area within about 15 minutes' walk from the village, and in and around gardens. This was a smaller area than that exploited for fish and game resources, but essentially the same area in which most of the wild vegetable foods were collected. The only exceptions were the Noctuid caterpillars which were collected within the traditional territory of a neighboring village and in cooperation with that group, and the *Rhynchophorus* larvae 'cached' near hunting/fishing camps.

Dufour notes that: "The dietary records [in May-June and November-January] did not adequately sample seasonal differences in insect consumption, and it is likely that insects were also important in the diet when caterpillars were available in August and September. Over the entire year insects probably contributed 5% to 7% of all the animal protein consumed." Dufour suggests that, while the quality of insect protein may not be as high as that of vertebrate protein, "its amino acid composition is complementary to that in the dietary staple, cassava, which is limited in lysine and threonine."

Dufour continues (p. 394):

> In general, insects were most often collected and consumed when other animal foods were available in very limited quantities, or not at all. This role of insects in damping fluctuations in the intake of animal foods reflected both seasonal variations in the availability of animal resources, and the day-to-day variability that occurred in individual households throughout the year. The high level of insect consumption recorded in May-June coincided with a seasonal peak in the abundance of alate ants and a relative low point in fish and game availability. On the other hand, the low levels of insect consumption recorded for November-January coincided with a period of average to exceptionally high fishing productivity. The actual availability of fish and game in individual households, however, was not completely dictated by seasonal factors. It depended to a large extent on the time and effort put into resource acquisition by males. Thus, even in January

when fishing was the most productive, the diet records indicate that some households were consuming ants and termites collected by women.

Continuing, Dufour states (p. 394):

> Although insects were most often consumed on days when fish and game were in short supply, some forms, such as *Rhynchophorus* larvae and alate ants, were valued as delicacies in their own right and eaten both as snacks and with meals. Less valued insects, such as ant and termite soldiers, were most often eaten with meals at which no other animal foods were available or permitted [not permitted because of food restrictions that are part of the Tatuyo medical system]. In some cases the quantity of insects eaten at meals was very small, not more than 10 to 15 termite soldiers' heads, or a tablespoon of dry ground ants. In these quantities the insect material functioned as a condiment. It added diversity to the meal, and thereby increased the total food energy consumed. Wild nuts and seeds were often used in a similar way. This condiment function of insects is not trivial because dietary protein is only effectively used as protein when energy intake is adequate.

Dufour briefly discusses edible insects in relation to the food restrictions that are part of Tatuyo (and other Tukanoan) medicine and ritual. All animal and vegetable foods are ranked in categories, and fish and game, which are the highest ranked foods, are the first to be removed during illness, certain personal crises or rituals. In general, insects rank lower than fish or game, and ant and termite soldiers, being among the lowest ranked foods, were sometimes the only animal foods permitted in the diet. Dufour mentions that adult males during male adolescent initiation rites were limited to diets of water, cassava starch, and termite soldiers for as long as two weeks. The same diet was adhered to by menstruating females for a day or two at a time.

According to Dufour, the inclusion of insects in indigenous diets should not be considered a mere curiosity. The conclusion to be drawn from the study is probably most concisely summarized in the following statement (p. 384): "The research presented here indicates that insect fauna is frequently consumed and clearly an important food resource for Tukanoans. I thus suggest that a consideration of the role of insect fauna in the diet needs to be included in any evaluation of the adequacy of protein resources in Amazonia."

Coleoptera

Bruchidae (seed beetles)
Caryobruchus sp. (*scheelaea* Bridwell?), larva

Ruddle (**1973**) reported that the succulent, greasy larvae of *Caryobruchus* (*scheelaea?*) are particularly relished by the Yukpa and are the most frequently consumed of the coleopterans. They are known as "etéme" and are either skewered or wrapped in leaves and gently roasted, or, less commonly, consumed raw. The larvae develop only in the nuts of the kurukmatoro (*Scheelea* sp.) palm which grows in the hot lowlands. The larvae become large enough to eat in October and November, about two months after the nuts have fallen to the ground and begun to rot. The Yukpa who live at the higher elevations make special trips to the lowlands to collect them.

Buprestidae (metallic woodborers)
Euchroma gigantea Linn., larva, adult

Dufour (**1987**) reported *E. gigantea* among the foods of the Tukanoans. The Tukanoan name for it is *boopica*. This, plus other coleopterans used were all woodboring; the larvae were preferred although adults were occasionally eaten as well. The dry weight of the adult beetle was found to be 3.0g.

Cerambycidae (long-horned beetles)
Acrocinus longimanus (Linn.), larva

Larvae are eaten by the Tukanoans (**Dufour 1987**). They are called *pikoroa*.

Curculionidae (weevils, snout beetles)
Anthonomus spp., adults
Rhynchophorus (= *Calandra*) *palmarum* Linn., larva

According to **Ruddle** (**1973**), adults of *Anthonomus* spp. are serious pests of both growing and stored maize. The weevils, known as *poatask*, are consumed by the Yukpa during a six-weeks period prior to the maize harvest and are collected only from the growing plants, usually about one handful at a time. They are wrapped in leaves and gently roasted. As noted by Ruddle, weevils of this genus are ubiquitous throughout Latin America.

Reichel-Dolmatoff (**1945**: 28; vide Ruddle 1973) reported that the Iroka subgroup of Yukpa ate "palm worms" which he identified as *Calandra palmarum*, this being apparently the first report of palm weevil consumption in Colombia.

Dufour (**1987**) reports that palm grubs, *Rhynchophorus* spp., known as *waraa*, were the most important coleopterans collected: "The Tatuyo felled palms to harvest the fruits, and often returned at a later date to harvest the larvae which subsequently developed in the pith. Palms were also cut specifically with the expectation that they would be invaded by weevils and the larvae ready to harvest in two or three months. Thus, the larvae were both a by-product of the harvesting of palm fruits and 'cultivated.' In the latter sense they were frequently used as a food cache by men on hunting and fishing trips away from the village." The live weight of *Rhynchophorus* grubs from the same log ranged from 3-16 g and the acquisition rate was 2,000 g/hr. Although *Rhynchophorus* was collected from a variety of palms, *Mauritia flexuosa* and *Jessenia* sp. appeared to be the most important.

The semi-cultivation of *Rhynchophorus* grubs by the Barí Indians was described by **Beckerman** (**1977**) (see Introduction). See also Santelos (1959, food of the Irapa) and Wilbert (1960, food of the Pariri) under References Cited.

Passalidae (bess beetles)

Dufour (**1987**)reported that a passalid of unidentified genus, known as *yayaru*, is eaten by the Tukanoans. Both larvae and adults are eaten.

Scarabaeidae (scarab beetles)
Ancognatha sp., larva
Megaceras crassum (author?), adult
Podischnus agenor Olivier, larva, adult

Ruddle (**1973**) reported that the large *Podischnus agenor*, or rhinoceros beetle, is particularly relished by the Yukpa because it "contains a lot of meat." The adults (female termed *poxta*, the male *poxta-uwatpu*) are active at night and appear in large numbers during the early months of the rainy season. It is sought by the women and children in their maize fields and sugar cane plots and to a lesser extent in clumps of wild cane. The larvae are searched for earlier in the year and are found in soils rich in organic matter and dead roots, such as those of newly cleared fields. Usually, only the abdomens of the adults are eaten. They are skewered on a stick and toasted lightly. Ruddle states that some, mainly the children, prefer to eat the beetles raw.

Dufour (**1987**) reported adults of *Megaceras crassum* among Tukanoan foods. The dry weight of the beetle is 2.2g.

Patricia Conway of Milwaukee, Wisconsin, who has spent a considerable amount of time in Cauca State in southwestern Colombia, reported (pers. comm. 1987) that the only insect known to her to be consumed in that area is a large, white woodboring larva, identified by Professor Rodrigo Torres, a Colombian entomologist, as *Ancognatha* sp. (Dynastinae). It is fried and considered tasty. According to Torres, it is grown in great quantities on a farm near Bogota.

Miscellaneous Coleoptera

See Hugh-Jones (1979) in the Introduction, Goldman (1963, as food in the Uaupes-Coqueta region) and Wilbert (1960, food of the Pariri) under References Cited.

Diptera

Stratiomyidae (soldier flies)
Chrysochlorina spp., larvae

Chrysochlorina, or soldier fly, larvae are collected by the Yukpa from pools that seasonally become cut-off from streams (**Ruddle 1973**). Usually, only 10-15 larvae are eaten at any one time. They are wrapped in a large leaf and gently roasted.

Hymenoptera

A wide assortment of bees, ants and wasps are consumed in Colombia.

Apidae (honey bees, bumblebees)
Trigona clavipes (author?), larva
Trigona trinidadensis (author?), larva

The Yukpa are avid honey hunters (**Ruddle 1973**). Two species of stingless bees, subfamily Meliponinae, *Trigona clavipes* and *T. trinidadensis*, are important as sources of both honey and bee larvae or "brood," the importance of the former being such that the Yukpa name for it is *wáno*, the term also used to describe all types of honey. The Yukpa term for *T. trinidadensis* is *wikisa*. The component parts of the nests are also used for various purposes.

See also Wilbert (1960, food of the Pariri) under References Cited.

Formicidae (ants)
Atta cephalotes Linn., winged female, soldier
Atta laevigata, Smith, winged female, soldier
Atta sexdens Linn., winged female, soldier

According to **Cowan** (**1865:** 160):

> Herrera says, the natives of New Granada (an early name for Colombia) made their main food of Ants, which they kept and reared in their yards. Sloane confirms this, and says they are publicly sold in the markets. Abbeville de Noromba tells us these great Ants are fricasseed. Schombergk, in his journey to the sources of the Essequibo, one evening saw all the boys of a village out shouting and chasing with sticks and palm leaves a large species of winged Ant, which they collected in great numbers in their calabashes for food. When roasted or boiled, he says, the natives considered these insects a great delicacy.

The ants most commonly eaten by the Yukpa are the leafcutter ants, *Atta* spp., known as *kiavu*, which are abundant and sometimes very destructive to crops and individual trees (**Ruddle 1973**). They are collected in May at the beginning of the rainy season. The method is interesting. On a suitably rainy morning, before dawn, a moat is dug around the entrance to the underground nest. The nest entrance is then enlarged enough that the rain pours in, soon starting to flood the nest. As the ants pour out, they are trapped by the waterfilled moat. The large, gravid female ants are selected, usually enough to fill several small baskets. Individual handfuls of ants are wrapped in leaves and roasted; only the abdomens are eaten.

Leafcutter ants (genus *Atta*) were collected in quantity by the Tukanoans (**Dufour 1987**). Soldiers were collected by inserting a probe, such as a palm leaf rib stripped of leaves, into a nest entrance and removing the soldiers clinging to it. Alate females, highly prized as a delicacy, were collected as they swarmed from the nest by the thousands on their mating flights. The mating flights occur in the early part of the principal rainy season, with, sometimes, an additional flight at the beginning of the second, shorter rainy season. The day of the flight can be very accurately predicted from the weather pattern and type of activity at the nest. Dufour states: "The female alates of *A. cephalotes* Latr. were particularly easy to collect since they left the nest just before dawn and could be attracted to a burning flare and caught neatly in a basket. Those of the other species of *Atta* had colonizing flights during the day, and were collected by handpicking them as they emerged from holes spread over the nest surface." The live weight of *A. sexdens* alates was 0.6g.; the acquisition rate for this species and *A. laevigata* was only 200 g/hr compared to 3200 for *A. cephalotes* Dufour (pp. 395-396) estimates the biomass of queens in a colony at about 3,000 g (fresh weight), of which about half may be collected.

Tukanoan names for the three *Atta* species are: *A. cephalotes* soldier, *mekaiyaa*, alate female, *mekaiyaa liara*; *A. laevigata* soldier, *ruhaa*, alate female, *ruhaa liara*; and *A. sexdens* soldier, *biapuna*, alate female, *biapuna liara* (Dufour 1987).

Earlier reports on *Atta* ant consumption include **Bodenheimer** (**1951**: 307), who, without citing a source, reported that the *mestizos* roast *sauba* ants in great quantities and that they are a "national dish" all over the Andean region. Several individuals have mentioned to the author (pers. comm. 1987, 1988) that toasted *Atta* ant abdomens are sold like popcorn in the movie theaters of Bogota.

Contesti (**1993**) calls the leafcutters (*hormigas culonas* or big-bottomed ants) a national delicacy that is equivalent -- in its high price and gastronomic value -- with Russian caviar or French truffles; the toasted ants constitute the highest attainment of Colombian cookery. By collecting and selling the ants, a campesino can earn

during the three-month season, from March to May, the equivalent of a year of day wages. A pound of ants sells for about $20, the equivalent of six days of work at the minimum wage. The author notes that their sale is especially redeeming because the ants grow in zones of erosion, with little agricultural employment. Some are exported to Japan. Historically, the author reports that the conquering Spaniards, after their initial repulsion, soon came to appreciate the ants and tried to monopolize their cultivation. This provoked such grave conflicts with the Indians that the Spaniards finally desisted.

See also Hugh-Jones (1979) in the Introduction, and Goldman (1963, as food in the Uaupes-Coqueta region), Santelos (1959, food of the Irapa) and Wilbert (1960, food of the Pariri) under Referencse Cited.

Vespidae (wasps, hornets)
Apoica thoracica du Buysson, pupa
Mischocyttarus spp., larvae
Polistes canadensis erythrocephalus Latreille, larva
Polistes pacificus Fabr. (= *pacificus modestus* Smith), larva
Polistes ssp., larva
Polistes versicolor (Olivier) ssp, larva
Polybia ignobilis (Haliday), larva
Polybia rejecta (Fabr.), pupa
Agelaia (= Stelopolybia) angulata (Fabr.), pupa

Ruddle (**1973**) reports that the larvae of specific social wasps are eaten by the Yukpa and are more or less available at all seasons. In addition, the nests of *Polybia ignobilis* (Yukpa term: *piowara*) contain an appreciable amount of honey during the latter part of the rainy season. The wasp combs are tossed into a fire and the larvae are killed and lightly toasted within a few seconds. In common with other insect foods of the Yukpa, the cooked larvae are usually eaten directly, but if a large number have been obtained they may be stored for a few days. Ruddle states that consumption of certain wasp larvae is specifically forbidden, those of the mason or potter wasps (subfamily Eumeninae) because they are thought to cause blindness if eaten. Others such as solitary wasps, a spider wasp (Pompilidae), and a digger wasp (Sphecidae) are not specifically forbidden, but are not utilized.

Other edible wasp larvae reported by Ruddle include: *Mischocyttarus* spp. (Yukpa term: *wanacana*), *Polistes canadensis erythrocephalus* (*mtst koruca*), *P. pacificus modestus* (*nonawu*), and *P. versicolor* ssp. (*mtst*).

Pupae of three species of wasps were observed by **Dufour** to be eaten by the Tukanoans, *Apoica thoracica*, known as *utia*, *Polybia rejecta*, also known as *utia*, and *Stelopolybia angulata*, known as *totu utia*.

See also Hugh-Jones (1979) in the Introduction, and Santelos (1959, food of the Irapa) and Wilbert (1960, food of the Pariri) under References Cited.

Isoptera

Termitidae (termites)
Macrotermes sp., soldier
Syntermes parallelus (author?), soldier, winged female
Syntermes snyderi (author?), soldier, winged female

Dufour (**1987**) states that leaf-cutters of the genus *Syntermes* are the most important termites in the Tukanoan diet. Soldier *Syntermes* are collected in the same manner as soldier ants. Alate females were collected by using leaf traps to channel them into a restricted number of exit holes. They are used as fish bait as well as for food. The species consumed were *Syntermes parallelus* (Tukanoan term for soldier: *bupena*), *S. snyderi* (soldier: *meka bupuara*), and *Macrotermes* sp. (only soldiers eaten).

See also Hugh-Jones (1979) above in Introduction.

Lepidoptera

Dufour (**1987**) states that two species of colonial caterpillars were collected in particularly large quantities by Tukanoans. " The first, *hutia*, was a lightly haired, smallish caterpillar that nested in secondary growth and was as important for fishing bait as for food. The second species, *batiya*, was a larger, brightly colored caterpillar that nested in a common primary forest tree, *Erisma yapura*, and was collected as it descended from the canopy to pupate on the forest floor." Both species, for unknown reasons, were patchy in their distribution. Of two other species using cultivated plants as hosts, one was found on cassava leaves, the

other on the cultivated tree, *Inga* sp. Several other kinds of caterpillars purportedly used were not observed by Dufour.

Hesperiidae (skippers)

Larvae, called *kiinamono*, of unknown genus are consumed by Tukanoans (**Dufour 1987**).

Lacosomidae (sack-bearers)

A larva, genus unknown, is consumed by Tukanoans (**Dufour 1987**).

Noctuidae (noctuids)
Mocis repanda, Fabr., larva
Spodoptera frugiperda J.E. Smith, larva

Larvae of the above two species are consumed by the Yukpa (**Ruddle 1973**). Both are termed *yupúna*. The maize crop is a good source of *yupúna* which are collected, wrapped in leaves, and roasted. According to Ruddle, consumption of *yupúna* is now much reduced because of increasing acceptance of "wátia" ways (Yukpa term for people who are ethnically not Amerindian). The maize fields are still examined for pest infestation, but the larvae are frequently discarded rather than being utilized as food.

As noted above, *batiya*, a larva of unknown genus is consumed in quantity by Tukanoans (**Dufour 1987**).

Notodontidae (prominants)

A larva of unknown genus, called *menehaia*, is consumed by Tukanoans (**Dufour 1987**).

Saturniidae (giant silkworm moths)

A larva of unknown genus, called *hutia*, is consumed by Tukanoans (see above) (**Dufour 1987**).

Neuroptera

Corydalidae (dobsonflies, fishflies)
Corydalus spp., larvae

The aquatic larvae of dobsonflies, *Corydalus* spp. (known as *stpaykt*), are widely available in the stony shallows of streams and rivers and are frequently eaten by the Yukpa, after being lightly roasted (**Ruddle 1973**). Although abundant, only 10-20 larvae are collected at any one time. The adult insects fly in the early evening and are large, some attaining a wing span of 15 cm (6 inches). Before roasting the adult insect, the head, wings, and legs are removed. The Yukpa are quite discriminating in their food insect choices, however, and the adults are infrequently used as food even though they are very weak fliers and are easily caught.

Orthoptera

Acrididae (short-horned grasshoppers)
Aidemona azteca Saussure, nymph, adult
Orphulella spp., nymphs, adults
Osmilia flavolineata DeGeer, nymph, adult
Osmilia spp., nymphs, adults
Schistocerca spp., nymphs, adults

Ruddle (**1973**) reported that nymphs and adults of the above species are used as food by the Yukpa: the first three listed are known as *ptsatpt*, *Osmilia* spp. and *Schistocerca* spp. are known as *kosopina*. The women and children scour the fields, particularly during the wet season, catching grasshoppers in their cupped hands. According to Ruddle, in addition to providing a good source of food, "this activity has the added advantage of preventing the accumulation of a highly destructive grasshopper population among the crops." Occasionally, especially in January and February, a large group will organize a fire-drive to collect grasshoppers. The dry grass is set afire and "the fleeing insects are driven toward the waiting women and children who beat them down with

large fans (pthpa) and store them in baskets." For eating, they are wrapped in leaves and roasted, or they may be skewered and lightly toasted. They are ordinarily used as a side dish.

Romaleidae (lubber grasshoppers)
Tropidacris c. cristata (Linn.) (= *latreillei* (Perty)), nymph, adult

According to **Ruddle**, "the plump, juicy *sakaramo*" (*Tropidacris latreilli*), is particularly relished.

Tettigoniidae (long-horned grasshoppers)
Conocephalus angustifrons Redt, nymph, adult

Nymphs and adults, called *ptstna*, are eaten by the Yukpa (**Ruddle 1973**).

Trichoptera

Hydropsychidae (net-spinning caddiceflies)
Leptonema spp., larvae

Small larvae of *Leptonema* are common in the rivers where the current is strongest. They are collected in small quantities of 50-60, wrapped in leaves and gently roasted. The Yukpa term is *misípsi* (**Ruddle 1973**).

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Regarding the Tucanoan, Arawakan, and Cariban tribes in the southern Colombia-northwestern Brazil region, Goldman states that farming dependance is mainly on roots of manioc and fish are the main source of protein. He says, however (p. 770): "Fullest use of wild foods is made by all tribes in the area. Women gather various kinds of edible ants, grubs, berries and roots. Wild food gathering is not a regular activity; it is undertaken sporadically, either to make up deficiencies in the fish and game diet, or for variety. The known ripening of fruits and berries is almost invariably an occasion for a gathering expedition."

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Santelos, P. de. 1959. Etnografía Yucpa: Economía domestica. *Venezuela Misionera* 247: 244; 249:302-304.* Caracas.

Santelos reported (pp. 244, 302) that, among insects eaten, the Irapa groups ate two kinds of palm worms

(*mikarka* and *etme*), leafcutting ants, and wasp larvae.

Wilbert, J. 1960. Zur Kenntnis der Parirí. *Archiv fur Volkerkunde* 15:80-153.

In a brief account of insects eaten by the Parirí, Wilbert (p. 109) mentioned beetle larvae, applying the term *etme* to the "caña brava beetle," bee and wasp larvae, and leafcutting ants. Also mentioned is a larva extracted from trees of the genus *Ficus* when felled.

Chapter 7 of The Human Use of Insects as a Food Resource: A Bibliographic Account in Progress, by Gene R. De Foliart, posted on website July, 2002