

### 3 RESOURCES IN THE JARAWA TERRITORY

The resources of the Jarawa Reserve were surveyed by the following organisations; the Department of Forest, A&N Administration, Botanical Survey of India, and Zoological Survey of India. The Anthropological Survey of India studied the behavioural aspects of the Jarawas related to procurement, distribution and utilisation of resources. The study took into account such biological resources found within the defined territory, which are actually used by the Jarawas regularly or occasionally. Such resources were also accounted for, which might not be used by the Jarawas, but which influence the way of living of the Jarawas directly or indirectly. Thus, it was a study in the ecology of the Jarawas, trying to assess the availability and accessibility of resources required by the Jarawas.

#### **Biomes of the Jarawa habitat**

The shoreline facing open sea was often sandy, in several places the coasts were rocky. Littoral and sublittoral zones were occupied by underwater corals. Due to continuous action of waves hollows were created on rocks and formed tide pools. Marine algae and sea grasses were seen in places of sandy shores. The littoral vegetation comprising *Hibiscus tiliacea*, *Thespesia populena*, *Pongamia pinnata*, etc. were found at the edges of forest close to sea. These were followed by evergreen or semi-evergreen forests dominated by trees like, *Terminalia manii*, *T. bialata*, *T. calappa*, *Sterculia campanulata*, *Calamus andamanicus*, *Licuala peltata*, etc. The coral bed displayed variety of marine life like, molluscs (shelled and shell-less), echinoderms, fishes, etc. In the littoral rocks neritids, chitons, muricids, etc. were seen in plenty. A number of forest birds and several shore birds were noticed. Occasionally beehives were seen on the trees inside the forests. The shore areas used to receive high wind evident by shape of canopy of trees near seacoasts.

The areas on the coast located inside bay or creeks receive tidal water without high waves. Due to lack of waves action and coastal currents mud forming silt were deposited on beaches. Organic matters were also deposited on muddy substratum. Growth of mangrove was luxuriant. Mangrove was generally followed by littoral vegetation containing plants viz., *Tetrameles* sp., *Terminalia calappa*, *Calamus* sp., *Licuala peltata*, etc. Oysters were attached to substrata in intertidal zone. A number of animals, which construct tubes and burrows, were seen in muddy zone viz., crabs, mudskippers, cerithid molluscs, etc. Many fishes, prawns, bivalves were seen in shallow waters. Birds like, reef herons, little egrets, blacknaped tern, whitebellied sea eagle, whitebreasted kingfisher, etc. were seen.

The landscapes of the peripheral forests of the Jarawa Reserve by the side of Andaman Trunk Road or close to settlers' villages vary to certain extent from other parts of the Reserve. The areas between Potatang and Middle Strait in South Andaman were largely semi-evergreen forests containing giant trees like, *Dipterocarpus* sp., *Terminalia* sp., *Artocarpus chaplasi*, *Artocarpus lakoocha*, etc. The lower storey and

undergrowth were dense. *Licuala peltata*, *Calamus*, sp., *Baccaurea sapida*, etc. were seen near open spaces in the jungle. Some freshwater streams were seen in places and they occasionally had connections with the brackish water channels from sea. The areas near Dhani Nallah, Middle Andaman, were largely moist having deciduous type of forests and the understory was less dense. Trees like *Pterocarpus dalbergioides*, *Sageraea elliptica*, and *Artocarpus* sp. were seen in this area. A perennial stream was flowing through this zone. Many fishes, mostly freshwater were seen in the watercourses; crabs were occasionally seen. Water monitors were noticed near open spaces several times. A number of birds like parakeets, doves, kingfishers, crow pheasants, swifts, bulbul, etc. were seen. Honey beehives were noticed on trees inside the forests.

### **Plant resources**

To assess the density of plant resources in the forest, representative sample plots were laid on the ground at different locations to ensure that various forest types are covered during the survey. These types include, Littoral Forest (4A/L1), Tropical Evergreen Forest (IA/C2), Andaman Semi-Evergreen Forest (2A/C1) and Andaman Moist Deciduous Forest (3A/C1). The plots were laid within the radius of 5 km from the location of a particular Jarawa camp during the period of the survey, because the distance of 5 km was considered to be the operational territory of the Jarawas, so far as hunting and food gathering is concerned. Each team laid out several sample plots of varying sizes at different locations at random (Table 1). At the same time the teams also conducted status survey of the plant species in the Jarawa Reserve.

All the plant species that the Jarawas were found to use during the course of the survey for various purposes were taken into account to conduct the resource survey within the laid out sample plots.

Through interaction with the Jarawas effort was made to find out the frequency of the use of a particular plant species by them and through the survey availability status of particular plants species has been projected on a broad scale of plenty, adequate and scarce.

The plant resources can be categorized as edible, medicinal, used for construction of shelter, adornment and various other purposes.

### **Plants for food**

The Jarawas use fruits, nuts, seeds, leaves, tubers and roots of different plants as secondary source of diet. They eat many kinds of seeds and tubers, some are eaten raw and some are processed before eating. Most of these seeds and tubers are gathered and transported to the camp by women, while men and children occasionally help them when the seeds are abundant. All kinds of fruits are eaten fresh and a major portion is consumed on the spot of gathering. During the study, the BSI personnel could collect information about 58 plants which provide food to the Jarawas. Some of those are

used frequently, like *Artabotrys speciosus*, *Artocarpus chaplasha*, *A. lakoocha*, *Baccaurea ramiflora*, *alamus andamanicus*, *Cycas rumphii*, *Dioscorea bulbifera*, *D. vexans*, *D. glabra*, *Diospyros andamanica*, *Ficus racemosa*, *Garcinia cowa*, *Mangifera andamanica*, *Pinanga manii*, *Donax canaeformis*, *Pometia pinnata* and *Terminalia catappa*.

The Jarawas are more dependent on animal foods for protein and fat. This is supplemented by a wide variety of plant foods that provide reasonable quantity of carbohydrates and vitamins. The Jarawas more often consume fruits and honey found in the forests rather than digging for tubers and roots (see Table 2).

### **Plants for medicine:**

The Jarawas depend upon herbal medicines to cure different ailments. During the course of study it was noticed that the Jarawas applied plant products externally or in the form of crushed paste. Plant products are worn around head, neck and waist. The young fronds of *Angiopteris lygodiifolia* and mid rib of leaves of *Pandanus andamanensis* (*thadow / paliyu*) are tied around the chest to control cough, cold and body pain respectively. The whole plants of *Trichosanthes bracteata*, *Piper betle* and tender shoots of *Ageratum conyzoides* (*aaktel*) are worn around neck and waist to cure fever and throat pain. Young leaves of *Amomum aculeatum* are finely dissected and worn around neck and head. The crushed leaves of *Thottea tomentosa* are applied on chest to control cough and fever, leaves of *Syzygium samarangense* are wrapped around the head during fever. Further, the bark and twigs of *Dracaena* called *tidba* are peeled off and the twigs are then used to clear the genitals during menstruation period. Table 3 presents a list of plants used by the Jarawas to cure various health disorders.

The members of the Anthropological Survey could collect some information on a few more medicinal plants and their Jarawa names.

*Pahala*: Its leaf is used to treat snake, scorpion or centipede bite. They heat the leaves keeping on fire (*tuhu*) and apply the same on the spot of the bite.

*En-taw*: Extract of its tender leaf is used to stop vomiting.

*Omeya-nada*: When they suffer from headache or any kind of body pain, they tie the bark of the tree on the affected part. Leaves of the tree after hitting are used to compress the affected part.

*Wa cha heel*: Bark and leaves of this plant are used in the same way and for the same purpose as in the case of *omeya-nada*.

*Chik baag*: Extract of its bark is applied on the body when somebody suffers from fever. Menstruating females sit on platforms made with stems of this tree placed parallelly.

*E-hol*: It is a kind of climber. Sap of the stem is used to cure pain in abdomen.

*In-neta*: It is a shrub. To treat a person suffering from fever, they heat the leaves and compress the entire body with them. Besides, it is also used as a curative for labour pain.

*Homal*: Extract of its leaves is bee repellent. Bark of the plant is tied to body or limbs to get rid of pain.

Name of some of the diseases and pathological conditions common among the Jarawas are given below:

1. Snake bite	<i>Topo enok jalo</i>
2. Scorpion bite	<i>Telong enok jalo</i>
3. Centipede bite	<i>Taita enok jalo</i>
4. Abdominal pain	
a) Upper abdomen.	<i>Aapaya ulleda</i>
b) Lower abdomen	<i>Aniyeya ulleda</i>
5. Fever	<i>Hullu</i>
6. Otitis media	<i>Anika ulleda</i>
7. Headache	<i>Animul ulleda</i>
8. Pain in neck	<i>Enengdu ulleda</i>
9. Pain in the hand	<i>Eniboy ulleda</i>
10. Wrist pain	<i>Enang Jali ulleda</i>
11. Diarrhoea	<i>Enchubele</i>

As curative medicine for the aforesaid diseases, they use a number of herbs and *aalam* or red ochre in different ways. In most of the cases they use extract of certain leaves, bark, stem and roots

### **Plants for shelter**

Though the Jarawas consider their settlement area as well as a hut as a *chadda*, they differentiate different types of huts. A small lean-to-type temporary hut used by a couple and their children is *tutime chadda*. A semi-permanent hut can be oval or round shaped; such a hut can be of medium size meant for four to five families, or it can be large meant for twenty and more families. Such a shelter is known as *chadda-de huthu* or *chadda-de-thuma*. A bachelor boys' dormitory, where widowers also reside, is called '*thorkalang chadda*' and a maidens' or widows' dormitory is '*thorkongo chadda*'. The size of a temporary lean-to-type hut (*tutime chadda*) varies from 4.5ft to 5ft in length, 5ft to 5.5ft in breadth and 4.5ft to 5ft in height. Generally six to eight branches of locally available trees with a diameter of about 2 to 3 inches are used as supporting pillars on which long branches are tied with bark strips, both horizontally and vertically, for supporting the roof (*wilpo*). Then the roof is thatched with long cane leaves and a kind of palm leaves (*salai patti*). Both men and women take part in the collection of materials as well as in the construction of shelters. From the collection of materials to the construction of a lean-to-type hut they require one to one and a half-hour. In those huts specific spaces are reserved for specific uses; there are areas for *itet* (sleeping), *thula* (living space), *thuha* (space for making fire). The fire is used for cooking, keeping the space warm in night and also to keep insects away. Floor of the back portion of the hut is often used for storing domestic articles including wooden buckets containing edible items like honey or pieces of roasted pig-

fat, processed seeds of jackfruits, roots and tubers. In that area they also keep collected cloth, small pieces of iron, knives, unfinished fishing nets, various ornaments, aluminium pan (*buchu*), bundle of bows and arrows, branches of banana, coconut, *ood* (white clay) in coconut shells, bottles or jerry cans containing water. Some articles like bows and arrows, orchid fibres used for decorating buckets, cane strips, one or more pig-skulls nicely tied with cane strips, a few head, neck and waist ornaments made of cotton or woollen threads, leaf ornaments, *alam* (red clay) packed in polythene packs are often hung from the roof of the hut.

A semi-permanent medium or big hut is stronger structurally. At the Tahato *chadda* of the Thidong area there are three medium size huts; their measurement are i) 6.7mt x 4.7mt x 3.9mt; ii) 6.5mt x 5.9mt x 3mt; and iii) 5.4mt x 4.7mt x 3mt. Two large huts were measured, one each at Tutarvel and Mothebute in the same area. The first one measures 16.2mt x 6.8mt x 4.8mt and the second one is 12.2mt x 9.10mt x 4.6mt. In each of the huts there is space demarcation for individual families. This demarcated space is known as *thula*. There would be a central fireplace in each large hut used for baking or boiling meat, besides the individual hearths for the family units. Common fireplace is also found in each medium size hut. In most cases there is a *ham* or hanging platform for keeping pig-fat and meat. Such a platform is made above the central fireplace. One or two such platforms made elsewhere in the hut are used for keeping household articles. The platforms are generally made at about 2<sup>1</sup>/<sub>2</sub> or 3ft high from the ground. In each semi permanent hut, in addition to various foraging and household articles including some steel and aluminium pots and vessels and some cotton and synthetic apparels, there would be a number of pig-skulls hanging from the roof tied with cane strips or put in fishing nets.

The Jarawas construct their huts on ground. While some huts are very small and can accommodate just 3-4 persons, others are large enough to accommodate 3-5 families. There would be a fireplace inside each hut, where firewood is burnt round the clock. Sometimes resin of *Canarium euphyllum* is used for maintaining continuous fire. This results in continuous smoke serving as mosquito and insect repellent.

For constructing the huts stems of plants like *Baccaurea*, *Knema*, *Leea*, *Lagerstroemia*, *Areca*, *Antidesma*, *Dendrocalamus*, *Litsea*, etc. are generally chosen, depending upon the availability, for posts, beams, thatching rods or sticks. Leaves of plants like *Licuala*, *Donax*, *Caryota*, *Daemonorops*, *Calamus* and *Musa* are used for thatching. Bark strips of *Hibiscus*, *Planchonia*, *Anodendron*, *Antidesma* twigs of *Combretum* and cane strips are used as tying material. Floor of the huts, especially the place earmarked for sleeping, is usually covered with leaves of *Licuala peltata* and sometimes *Pterospermum acerifolium* (see Table 4).

### **Plants for ornamentation**

Though the Jarawas did not use any apparel to cover their bodies, in recent times some of them use clothes occasionally, which are collected from different sources. Fabrics

and woollen threads are known as *kangapo*. Further, some of them collect clothes not for the purpose of wearing them, but to make ornaments from the threads.

Traditionally the Jarawas adorned them with various objects like shell, clay, leaves and flowers. Recently they have added cotton threads and wool to the list. Though both the sexes are fond of ornaments it is the female folk who make them. However, once in a while men also make ornaments from floral resources. Ornaments of the Jarawas can be divided into two broad types - permanent and temporary. Permanent ornaments are made of shell, leaves of different kinds and cotton threads or wool, while the temporary ornaments are made of flowers, fruits and tender seasonal leaves.

The following permanent ornaments are used by the Jarawas

<b>Name</b>	<b>Material</b>	<b>Used as</b>	<b>Users</b>
<i>Lelele</i>	Shell	Necklace, headgear	Both sexes
<i>Euotoha</i>	Cotton thread, wool	Headgear	Both sexes
<i>Onagitho</i>	Cotton thread, wool	Necklace	Both sexes
<i>Oe taha</i>	Leaf	Headgear	Women
<i>Inothida</i>	Leaf	Armlet	Both sexes
<i>Pothang</i>	Shell	Armlet	Both sexes
<i>Oniniyang</i>	Cotton thread, wool	Waist girdle	Both sexes
<i>Capatagluma</i>	Leaf	Waist girdle	Women

The temporary ornaments are mostly named after the plants from which the materials are collected. Women of all age groups are very fond of decorating them with seasonal flowers. The Jarawas, both men and women of all age groups, decorate their face and body with clay (*ood*). After eating pig meat they invariably smear their face and body with clay and later make designs on it. Sometimes after eating flesh of monitor lizard they smear clay on their face and body with designs drawn with their fingers. Body decoration and painting are integral part of their daily activities. Certain specific geometric line designs like wavy, criss-cross and straight line have been noticed. The designs are made freehand with fingertips, nails, shells or wooden stencils known as *thomtang*. Sometimes close relatives of a deceased person can be seen to wear the jawbone or small pieces of long bones of the dead person on neck or on waist. The Jarawas generally dispose of a dead inside the forest away from their campsite. They leave it partially or completely exposed, often between the buttresses of some large tree, and wait for its decomposition before collecting the pieces of bone. The bones that are worn should not be identified with ornaments. The practice is related to the belief system of the people and the bones are worn for some days or weeks as mark of mourning.

Information about altogether 63 plants used for adornment was obtained. Generally females decorate themselves more than the males; however, during pregnancy females do not decorate themselves. The ornamentations are worn as headbands, necklaces, girdles, garlands and armlets. Sometimes some Jarawas were noticed to cover the entire body with the leaves of *Pseuduvaria prainii*.

During the first phase of the study, the Jarawas of the Boiab area were noticed to adorn themselves with plants like *Cerbera odollam*, *Dipterocarpus incanus*, *Macaranga tenarius*, *Ixora finlaysoniana*, *Musa sapientum* and *Licuala peltata*. In Thidong they were using *Cassia alata*, *Canavalia virosa*, *Mikania cordata*, *Nypa fruticans* and *Codiocarpus andamanicus*, while in Tanmad they were observed to use *Planchonia valida*, *Calophyllum inophyllum*, *Dillenia andamanica*, *Rauvolfia sumatrana*, *Bombax insigne*, *Adenanthera pavonina*, *Barringtonia asiatica*, *Hernandia peltata* and *Donax cannaeformis* etc. for adornment.

During the third phase, the Jarawas were noticed to use plants like *Nypa fruticans*, the leaves of which were finely dissected and made into long necklaces. Flowers of *Acacia auriculiformis* (Denna) were tied as head and waistbands. *Artabotrys speciosus* fruits were tied to make head and neck girdles. *Guettarda speciosa* and *Hernandia peltata* flowers were used as headband, while whole plants of *Globba sps.* were used to prepare necklace and waistband. In addition, *Otanthera celebica* flowers were also tied as waistband and garland. Tender leaves and flowers of *Musa textilis* and *Cynometra ramiflora* were tied as girdles, necklaces and headbands. Further, the pinkish florescence of *Pinanga kuhlii* was used as headband, necklace and waist girdle.

During the third phase of the study some of the Jarawas were noticed to use seaweeds, especially algal plants, for preparation of necklace and girdles. Whole plants of these seaweeds, identified are *Caulerpa racemosa* (Chlorophyceae), are referred to as *aale*. Complete plants of *Halimeda opuntia* (Chlorophyceae) are used for making garlands. *Sargassum wightii* (Phaeophyceae) is used as necklace and waist girdle and *Amphiroa anceps* (Rhodophyceae), referred to as *pilobaha*, are tied around neck and waist as girdles (Table 5).

### **Honey collection**

When the *Dipterocarps* starts flowering, all the Jarawas feel happy, because it indicates advent of the honey-gathering season. Generally the Jarawas collect two types of honey; one from white honeycombs made by big honeybees and the other from black honey combs of small bees. At the time of honey collection the Jarawas use the sap of leaves of *Orophea katschallica* called *tangopa jath*, *Pseuduvaria prainii*, called *hoomal*, and leaves and stem of *Amomum aculeatum*, called *uiyaw* as bee repellents. For collection and storage of honey and for keeping and carrying other articles, they prepare a bucket called *uhu*. This bucket is prepared from the wood or bole of *Pajanelia longifolia*, *Oroxylum indicum* and *Sterculia villosa*.

### **Miscellaneous uses**

**Implements:** Following are some of the major indigenous implements used for hunting and gathering activities.

**Arrow (*patho*):** There are different kinds of arrows for different purposes. Arrows seem to be considered as valuable possession. During their spare time the Jarawas

(male) bring out their arrows check and recheck each arrow with lot of care to make sure of or assess its efficacy at the time of hunting. Arrow making is a long process and the iron for the same is either supplied by the AAJVS or procured from roadside and villages. Iron is given shape with the help of chisel and hammer without tempering it in fire. It is sharpened on a piece of stone. Once the arrow is ready it is fixed to a bamboo shaft (*theenaang*) and tied with the string, which is made of the fibre of a climber known as *wiibo*. Thereafter the tied portion (*thopijaye*) is waxed. Depending on size and shape and nature the arrows are classified into the following types:

- (a) Arrow used for hunting of pig
- (b) Arrow used for fishing
- (c) Arrow used for hunting monitor lizard
- (d) Harpoon for pig hunting

The string of the harpoon is made of fibre of *ehabad* climber.

**Bow (*aav*):** For making bow wood of *chooi* (*Sagarea elliptica*) is used. It was observed that the tree is not available throughout the Jarawa territory. In order to procure the same they move long distances, sometimes to Pottatang or to the Baratang island. The bowstring, *betho*, is made from fibre of a climber known as *way*.

For making bow, the Jarawas use stem of *Calamus andamanicus*, *Dinochloa scandens* and *Sageraea elliptica*. Bowstrings are made from the bark of *Desmos dasymaschalus*, *Anodendron manubrium* and *Polyalthia parkinsonii*. The Jarawas make arrows of different sizes for different purposes like fishing, hunting of pigs and monitor lizards. Stem of *Murraya paniculata* is used for preparing longer shafts, while stem of *Areca triandra*. *Dinochloa* and *Ancistrocladus* are employed for making shorter shafts. Arrowheads are tied to the shaft with fibre from *Dendrobium* and the tied portion is waxed.

**Chest guard (*kekad*):** Chest guard is used by adult male Jarawas during hunting and gathering activities, though it is not compulsory; they insert their knives in it. It also protects the chest and abdomen from injury, which may occur during hunting. It is made of bark strip of *Stracula vilosa*. They keep two layers of bark strip in a chest guard and its width varies between 9 to 12 inches. Both the ends of the bark strip are neatly stitched together with threads extracted from the same bark.

*Kekads* are made from bark of *Planchonia valida*, *Polyalthia parkinsonii* and *Sterculia villosa*. It is protective in nature and also used for keeping knives. The surface of the *kekad* is decorated with a dye obtained from the stem juice of *Myristica andamanica*.

**Cane basket (*tai-g-a*):** It is used for collection of fruits, roots, tubers, shells, etc. It is somewhat conical in shape with wide mouth and narrow bottom. Circular sticks of the baskets are of red cane (*Korthalsia rogersil*) and strips are of malai cane (*Calamus baratangensis*).



Strips of cane and *Korthalsia laciniosa* are employed for making baskets. Later, leaves of *Licuala* palm are spread inside the basket. For cordage, lifting and carrying the baskets, carrying babies, transferring hunted pigs and for other such purposes, bark strips of *Anodendron manubrium* (*Apocynaceae*), *Antidesma velutinum* (*Euphorbiaceae*), *Calamus longisetus* (*Arecaceae*), *Combretum latifolium* (*Combretaceae*), *Dendrobium* sps. (*Orchidaceae*), *Desmos dasymaschalus* (*Annonaceae*), *Hibiscus tiliaceus* (*Malvaceae*), *Planchonia valida* (*Lecythidaceae*), *Pterocymbium tinctorium* (*Sterculiaceae*) and *Sterculia villosa* are used.

**Knife (*twad*):** Knife is generally used for different purposes ranging from cutting flesh to making string from a bark or a leaf or while eating tough pieces of meat, holding them with teeth and using a knife to cut them into eatable size. Once in a while they brandish their knives to scare or attract attention of people. Method of making a knife is same as that of a arrowhead. The knife is made either of iron or aluminium. The flattened end of knife is rapped with the string of *tha-an*, an orchid (*dendrobium*).

**Bucket (*u-hu*):** Wooden bucket is generally used in collection and storage of honey. It is also used for keeping and carrying other household articles. It is a dugout wooden block of a tree trunk known as *tha-ad* (*Pajanelia reheedii*). After getting the wooden block it is a scooped out and given the shape. Thereafter it is waxed from outside as well as inside. In order to procure the wooden block of this tree they visit the forest behind police quarters at Middle Strait.

**Torch (*pone*):** The Jarawas use torches for movement during night. These torches are prepared by rolling *Licuala peltata* leaves. Those are filled with *Canarium euphyllum* (*Burseraceae*) resin powder and tightened by the rope of *Calamus palustris* on a stick.

**Fishing tools:** The Jarawa men fish with bow and arrow, while the women use small hand net. A fishing arrow is known as *thom*. It has two main parts, the body or shaft made of bamboo stick and the needle shaped iron arrowhead. The fishing net is known as *botho*, its mouth is made of cane or a long and narrow branch of a tree bend to form a circle and the ends of the cane or the branch crossing each other are tied, while one end of the stick or cane is left long to form a handle. Earlier the fishing nets were prepared with bark fibre but nowadays they use nylon threads collected from seashore. The womenfolk prepare the nets.

The material culture of the Jarawas is not only utilitarian, they try to make the objects of daily use aesthetically pleasant. They engrave geometric designs on bow with iron knife, make intricate designs with lines on chest guard or wooden bucket, and decorate the buckets with strips made of orchid stems. They seem to derive immense pleasure not only from the end result, but also from the very act of decorating the objects. In addition, they spend considerable amount of time in making the ornaments discussed above and also for making designs on their own face or body.

Some Jarawas were observed to chew tobacco leaves and wild areca nut, a habit acquired or learnt from the police. Leaves of *Licuala peltata* are spread over

ground and the Jarawas use them as mats. In addition, during the third phase, the Jarawas of Thidong were found preparing mats using mid ribs of *Calamus grandis*; they were using such mats for sitting and sleeping. For pillows they use any type of wooden poles 6" to 8" diameter. Jarawa women use leaves of *Pterospermum acerifolium* as mats to sit on during monthly periods.

During the dry season the Jarawas use *Calamus andamanicus* (*Arecaceae*) or *otaang* as source of water. Stem of the plant is cut into 3 metre length pieces and kept vertically to yield sap, which is used as source of water. To obtain colour, *Myristica andamanica* of *Myristicaceae*, referred as *oro*, is used. The stem juice is used as drawing and colouring material.

For packing and covering leaves of *Donax cannaeformis*, *Licuala peltata*, *Phrynium pubinerve* and *Pterospermum acerifolium* are used. For toothbrush, Jarawa boys use thin branches of *Pongamia pinnata* of *Fabaceae* referred to as *Aichin*. (See Table 7).

### **Plant resources**

The entire Jarawa Reserve had remained biologically unexplored in the past and even today virgin forests still exist there. Present studies exhibit the presence of some economically important plants like banana, areca nut and mango in the Jarawa area and a number of species of timber trees are also found to occur. Several species of ethnobotanical importance are endemic to the Andaman & Nicobar islands.

The forests of the Jarawa Reserve evidently contain germplasm of many potentially important plants most of which do not occur elsewhere in our country. In the present collections, two orchids and two dicot specimens have turned out to be new species to Andamans. One orchid plant is named as *Dendrobium jarwae*, while other species are yet to be botanically named. The uses of some plants reported here are either lesser known or were unknown so far and therefore they deserve special attention and detailed studies. Biological screening and phytochemical investigations of the medicinal plants in particular are desirable. The bee-repellent plants like *Orophea katschallica*, *Pseuduvaria prainii* and *Amomum aculeatum* grow luxuriantly everywhere in the Jarawa territory.

The illegal extraction of forest resources, particularly hunting of wild pig, deer, fishing, collection of *dhup*, extraction of bamboo and timber, sand mining are continuing in the Jarawa Reserve.

Presently, plant resources occur in abundance in forests. The Jarawas are not finding much difficulty in accessing them. However, as the resources are seasonal, they shift their habits accordingly. For example, during the post monsoon period, the Jarawas used to collect tubers and underground food materials in abundance, while in dry season the tubers and underground food materials were comparatively scarce. During that period they were depending more on wild fruits and honey. In the rainy

season the availability of pigs and other games were more and they were mainly concentrating on hunting. Sometimes, the Jarawas move out of their own territory in search of resources; they were observed to cross over to Baratang by ferry to collect bow-wood.

The Jarawas live in harmony with nature, which is evinced by their method of collection of resources. Whether it is plant or animal resource, the Jarawas never destroy the sources of collection. This can be best exemplified by the way they collect bark for the preparation of chest guards. The Jarawas measure the exact requirement, peel off only that much bark and allow the tree to recover. Similarly, when they collect tubers, they make it sure that they collect them from mature plants only, while young plants are left undisturbed for future use. Likewise, when they have to make bow, they cut just what they need and never destroy the entire *Sageraea elliptica* tree. They are more future conscious than many other populations.

## **Animal resources**

### **Collection of various food items**

A Jarawa man was observed to collect a pair of crabs from the watercourse by trapping through a net. Normally, the men hunt crabs by shooting arrows when those are encountered in water or mud-flats. The women use net for trapping the crabs. In mudflats the women often dig out the crabs from burrows.

The Jarawa women and children usually catch fishes from shallow waters in streams and near shoreline, by hand nets. The Jarawa men and boys use pointed arrows (without metallic arrowheads) made of bamboo for fishing. While they catch fishes in shallow waters they approach them carefully (in shorelines and in water courses) and while the fishes come in a close range they release their arrows. The success rates of hitting the targets are high (about 70%). They gather the hunted fishes in the baskets on their backs.

The Jarawa women to collect turtles' eggs from the sandy beach in a bay area (Bluff Is.). The turtle nesting grounds are detected near the edge of tidal flat (high water mark), where grass grow. Two women were observed to dig a hole, with a diameter of about 0.70 metres, by knives and hands. They dug up to a depth of about 1.0 metre and started getting eggs from 0.6 metre of depth.

The Jarawa women and children collect marine molluscs like *trochus*, *turbo*, giant clams, cowries, etc. from the intertidal areas of coral beds on open seashores or mouth of bay areas. During low tides the coral beds are generally exposed where these molluscs are seen in good numbers. The chitons and neritids are usually collected from rocks on the tidal flats.

The clams are often seen in mangrove mud-flat areas. During low tides mud-flats are exposed and the Jarawa girls collect clams from the puddles or depressed areas where water is still standing. They feel the presence of clams by their feet and pick up and collect them in baskets.

The Jarawas collect grubs of wood inhabiting beetles. The women collect grubs from soil just underneath rotting logs. The larvae/grubs of the borers are collected by exposing/cutting an infested tree or tree stumps by cutting them with the help of an axe.

The Jarawas collect honey from tall trees, more often in the morning and sometimes in afternoon hours. Generally they move about in groups in the forests and first they try to locate the trees with beehives. After locating a prospective tree, they often tie up the base of the tree with bark threads or climbers, as a mark of right of the detector. Males and females climb trees to fetch beehives. During honey collection the members of the group sing songs to express their joy. At the time of honey collection the Jarawas use the sap of leaves of *Pseudouvaria prainii* (*hoomal*) or *Amomum aculeatum* (*u-i-a-o*) or *Orphea katschallica* (*tango-pajhao*) as bee repellents. They chew the leaves to bring out the sap. After climbing and approaching beehives they spray the sap by mouth on the beehives. On contact or smell the bees soon fly away. The Jarawas also used sticks of *hoomal* to remove the remaining bees. They cut the beehives by knives that are kept in honey buckets on their back. More often after collection of beehives the Jarawas sit together and share them among themselves.

Considerable difference in availability of honey between the two successive seasons; post monsoon (December) and dry (May) was noted. The estimated collection of honey per beehive was 8.812 kg (including wax) in December (n-8, mean – 8.812, SD – 3.85 kg) and it was 3.267 kg in May (n-4, mean – 3.267, SD – 3.307 kg).

Within the hollows of fallen log or tree trunks a different type of bees (small size) make nests. A few Jarawa women were found to locate a beehive (small size) within a tunnel of a fallen tree stump that they collected by exposing the hive with the help of an axe. The bees were, however, not very much of biting type.

The Jarawas move in groups into the jungles and keep watch on prospective locations for pigs in somewhat open spaces in the jungle. If they can locate pigs, they approach carefully and try to take position from different angles. Then they shoot arrows from a distance of about 15 to 20 m. Occasionally the Jarawas take support of dogs to surround the pigs from different sides and hunt the animals more easily.

On one occasion a Jarawa man was observed to hunt a water monitor from shrubby patch of a jungle. The monitor was not moving very fast. Seeing the monitor the man quickly placed an arrow on his bow, approached the target swiftly and shoot the arrow from about a distance of 10 m.

## Processing and consumption of animal food

Wild pig meat is the most precious animal food item for the Jarawas. After hunting by arrows the gut and the visceral mass is removed by cutting ventral side of the abdomen by a knife. The void space inside the body is then packed with leaves of *salaipati* (*Licuala peltata*). The hunter carries the pig on his back to the campsite with other men who had gone in a group for hunting. Some other persons of the group process the hunt. First, a platform is prepared on the ground on which firewood is kept and ignited. The whole pig is then burnt for removing the hairs and roasted for about half an hour. The head is cut with a knife. The body is dressed in a systematic manner and the outer skin with fat layer is cut into pieces. The head and the pieces are hung for smoking and roasting. The remaining parts of the body are cut into pieces and boiled in a metallic vessel. After boiling and roasting the meat is shared among members of the group and their families.

A group of the Jarawas was observed to consume one water monitor after boiling. The gut and viscera were removed by cutting the abdomen. Some transverse incisions were made on the body. The monitor was boiled in a metal pot for about 30 to 40 minutes. The flesh was then consumed after taking out the skin.

Fishes are often consumed after boiling and occasionally after roasting. Scales of large scaly fishes are removed by a knife. The Jarawas (especially the females) make incision with a knife on the abdomen, take out the gut and air bladder leaving the liver inside. A few transverse incisions are made on the body. The fish after keeping it in a net bag is boiled in a metal pot for sometime. The water in which the fish is boiled is also used as soup for drinking. In some cases small marine fishes are roasted on fire and the flesh is consumed. Skin is removed before consuming the flesh. On one occasion it was seen that the skin was carefully peeled before boiling.

After catching the crabs the Jarawas break the chellate legs and other legs from the body of crabs. They dispose of the legs, keeping the chellate legs only for consumption. They consume the flesh from inside the body and chellate legs after boiling.

The Jarawas consume giant lobsters and prawns after boiling. They take the flesh after removing the exoskeleton. They occasionally consume small prawns in raw condition after taking out the exoskeletons only.

The Jarawas eat all molluscs only after boiling them. For chiton, they remove the shell plates and the girdle with spines and consume the remaining flesh. For nerites, they pierce a stick through the opercular aperture and suck the flesh from inside the shell. In clams, the shells are loosened after boiling and the flesh is taken out easily from them.

The beetle grubs are eaten after roasting. The Jarawas (especially the females) take out the cuticular mouthparts of the grubs and squeezed out the gut containing soil

and wood fragments. A number of larva are wrapped in a large leaf and tied with a fibre. The larva are roasted in this condition on fire and consumed thereafter. The Jarawas consume large larvae of borer (*Cerambycidae*) in raw condition just after taking out from tree stumps.

The Jarawas bring beehives in honey buckets. Some honey is collected in the bucket in course of carrying it. At the time of consumption the Jarawas cut the beehives by a knife into pieces. A piece contains many larvae and pupa along with honey, which the Jarawas consume by sipping and chewing. Often they dip the pieces in the honey of the bucket during consumption. They dispose off the squeezed wax away from their hutments. They occasionally store excess honey in polythene bottles. The Jarawas always take bath after consumption of honey. The Jarawas eat turtle and turtle eggs after boiling only.

### **Availability and population of various animals**

Availability status of the following molluscs on the rocks on seashores was surveyed in Middle and South Andaman islands. Thirty samples on one sq km area on coral beds were taken during low tide. The population of spider conch varied from 0-4 (mean 1.5); tiger cowrie varied from 0-2 (mean 0.8); giant clam varied from 0-6 (mean 2.8).

Man-hour output of some molluscs, fishes, honey, insect larvae, etc. were recorded on several occasions. Five girls collected about 200 chitons in an aluminium pan in one hour from rocky coast by handpicking. The same group of girls collected about 300 nerites in about 45 minutes on another occasion. On one occasion at Jhaukona, South Andaman, two women collected about 45 clams in 15 minutes time from a swamp near mangrove. On another occasion at Jhulanpathar, Middle Andaman, three girls collected about 50 clams in just 10 minutes. On another occasion four Jarawa men and boys hunted about 4 kg of fishes by shooting arrows from the shoreline of Tentul Tikri (Bluff Island). On the same day three men collected about three kg of honey from three beehives within an hour. One day four women and girls collected 299 turtle eggs by digging sands on high-water marks from two closely located spots at Bluff Island within 40 minutes of time. Collection of insect larvae (beetle grubs) was noticed on a few occasions in South and Middle Andaman islands. On one occasion in Boiab, South Andaman, two women could collect about 100 grubs from beneath a rotting wood in 20 minutes. On another occasion one old woman and a girl collected about 50 beetle grubs by chopping a tree trunk with the help of an axe within half an hour at Thidong. In the same area two women and two girls could collect at least 250 grubs in about 25 minute; the grubs weighing about 15 gm on an average.

The Jarawas of all three areas, Boiab, Thidong and Tanmad collect ample quantity of honey from the forest areas, especially during dry season (April-May). The honey appears in beehives from the last part of December and reached its peak during the dry part of the year. Honey beehives are also found during monsoon (August-September), but in much less number and hence the quantity of honey collection by

the Jarawas begins reducing from the dry season. During dry season a person could collect as much as four kg of honey (including beehive) in one collection trip. On one occasion a group of about 25 Jarawas (male, female and children) from Tanmad collected about 15 kg of honey from the Baratang Is. In one afternoon a group of the Jarawas in Bluff Island during monsoon season collected about three kg of honey from three beehives on different trees within an hour. The collection of honey was done by three men on the occasion.

### **Visual record of animals**

There is presence of various birds in the forests as well as in the coastal areas and the following birds in appreciably large number: cotton teal, lesser whistling teal, red breasted parakeet, emerald dove, white breasted water hen, etc.

Water monitor of various sizes are there in the forest area and in the vicinity of water. They are at different places of Boiab, Thidong and Tanmad. Grapsid crabs (*Grapsus* sp.) are in appreciably large number on the rocky shores splashed often by water waves. They are very agile and hid swiftly into the crevices when approached.

### **Estimation of wild pig population**

Direct census of wild pig population in the Jarawa Reserve area was not feasible. Some footprints of wild pigs in mud-flats near watercourses at Hiulele, Motieta in Middle Andaman and wallowing spots near open spaces of forests in many places indicate presence of pigs in these forests in fairly good number.

The Jarawas do not hunt wild pigs in large number during the dry season of the year (April-May) e.g. in Boiab a group of Jarawas hunted only two pigs in two days and in the Thidong area only three pigs were hunted in one week. The condition of the forests in the Jarawa Reserve area is very good in terms of ample food and sufficient water for the pigs. The carrying capacity of wild pigs in 10 sq km area of forest should not be less than 120, but it is expected that the number of pigs during the period of the survey would not exceed sixty per cent of the capacity.

### **Some cultural practices related to the resources**

The Jarawas do not destroy skulls of wild pigs, turtles and water monitors during processing and eating; they preserve those intact as trophies in the hutments. The upper and lower jaws are tied with threads in their original positions and hung from roof of the hutments. They occasionally preserve bones of fishes and monitors.

When a Jarawa boy hunts a wild pig for the first time his community promotes him to adulthood. They observe a ceremonial function on such occasion. The boy after hunting and returning to the camping site remains silent and takes rest without any food. Other members of the community remained in a festive mood. In the evening the

boy is fed with a large quantity of pig meat till he vomits. He is given a new adulthood name.

The Jarawas consume honey always outside their huts. They dispose of the chewed bee wax, but never throw it on fire.

Many male Jarawas wear pieces of bones (preferably mandible, clavicle) of loved and respected deceased persons, perhaps, with the belief that the spirit of the deceased would bless and help them during hunting activities.

### **Threats to the resources**

Because of absence of large carnivores, the forests of Andamans are safe for movement of humans. There are, however, a few poisonous snakes present in these islands and common among them is banded krait (*Bungarus andamanicus*). Pit vipers (*Trimeresurus cantori*, *T. purpureomaculatus andersoni*) are also well represented here. The Jarawas are quite conscious about the danger from these snakes. They are quite afraid of a centipede (*Scolopendra subspinipes dehaani*), bite of which is quite painful. The centipedes are commonly noticed during the monsoon. Mosquitoes and biting midges are quite abundant in all mangrove areas and swamps. Painful bite of the midges makes staying and working in these areas quite difficult. The salt-water crocodile (*Crocodylus porosus*) is available in almost all tidal creeks of Andaman islands and the Jarawas are quite afraid of this animal.

### **Habitats of Jarawa settlements**

From the point of locations of the settlements/campsites, the Jarawas' camps are found at four major types of habitats within the Jarawa Reserve. These may be categorized as follows: (i) seashores, (ii) tidal creeks, (iii) roadsides or peripheral forests away from coastline, and (iv) deep forests away from coastline.

The seashore area is an interesting habitat in the sense that along one side it merges gradually into the undulating land holding rainforests with tall trees and luxurious undergrowth, and on the other side it passes down to open sea. A large area along the shoreline becomes submerged at high tides and emerges during low tides. The beaches are sandy or rocky. Corals occur extensively forming fringing reefs. The seashores occasionally receive high waves and strong winds. The Jarawas set their huts on the land far beyond the level of tidal waves. They gather lot of marine animals from the intertidal zones of the beaches, especially from coral reefs and rocky shores. Turtles lay eggs on the sandy beaches. Terrestrial animals like wild pigs, monitors, etc. are fetched from the forests.

The mangrove and littoral forests develop along the tidal creeks and inland channels. These areas receive tidal inundation but are protected from high waves and strong winds. The substratum generally consists of mud of varying depths. Whenever the mangroves extend seaward small boulders, pebbles and medium sized rocks are



seen at the edges of these forests. Waterlogging on the substratum is a usual feature in these areas. The Jarawas set their huts on the highland areas beyond the reach of tidal waters. The Jarawas collect ample of fishes, crabs, prawns, molluscs from the mangrove areas, and fetch wild pigs, water monitors, etc. from the contiguous rainforest areas.

The Jarawas at times camp in the peripheral forest areas or near the roadsides, quite away from the coastline. They set their camps often close to running watercourses. They collect freshwater or brackish water fishes from the watercourses, hunt water monitor and procure honey from the forest areas. The Jarawas seldom set camps within the forest away from coastline. Freshwater sources of some kind, either running watercourses or water trickling through hill slopes are, however, always noticed in the vicinity of Jarawa camping sites.

### **Consumption pattern of animals at different habitats**

The Jarawas consume diverse animals, *viz.* marine, freshwater and terrestrial forms. They subsist considerably on marine and brackish water animals apart from the terrestrial or freshwater ones. They are, therefore, dependent a lot on the maritime ecology. The forests in Andaman harbour some 35 species of terrestrial mammals including spotted deer (*Axix axis*) and barking deer (*Muntiacus muntjak*). Of them the Jarawas consume only the wild pigs and monitor lizards as food. The wild pig is their most preferred animal food item, but there is perhaps a selection on the rate of hunting of this animal at different seasons of the year. The frequency of wild pig hunting is at its highest during the monsoon to post-monsoon period, while it is lowest in the dry season. During the dry season there is plenty of honey and jackfruit (*Artocarpus* sp.). At that time proportionate consumption of animal protein (in the form of flesh, fish and mollusc) is less than that during post-monsoon and monsoon seasons. The pigs also contained less subcutaneous fat in the body in the dry season. The body fat enhances the taste of flesh. A few birds are also eaten by the Jarawas, but frequency of hunting of birds by them is very low. They never show much interest for bird hunting. The Jarawas never consume sea cucumbers, which are often seen in coral beds. But this animal usually constitutes a favoured animal food item of the people living in coastal areas in many places. The consumption of different marine molluscs is comparatively more during the post-monsoon season followed by monsoon season. The availability and consumption of turtles' eggs were doubtlessly much more during monsoon followed by post-monsoon season. There exists a variation in animal food consumption and procurement by the Jarawas.

### **Foraging zones for animals**

The wild pigs reside in the humid forests. They move about in bands of 4 to 10 and live on omnivorous diet like tubers, roots, carrion, offal, etc. The water monitors inhabit wet, marshy forests, edges of watercourses and they are partially aquatic. They can swim far off in the sea in search of foods. They also prefer birds' eggs, turtles' eggs and fishes.

The seashores are rocky, sandy or muddy. Life on rocky shores is mainly influenced by the tides; various neritids, chitons, muricids live here. Detritus-feeders like crabs also live here. Coral reef is a complex habitat inhabited by plenty of molluscs, fishes, crustaceans, etc. Top shell, turban shell, giant clams, scorpion shells, tiger cowrie, cockles, octopuses are often seen on reef areas during low tides.

Mangrove is one of the most productive coastal ecosystems and supports many brackish water fishes, freshwater fishes and shell fishes (molluscs). Burrowing crabs, prawns, shrimps, etc. represent crustaceans. Many of the animals of mangroves are common to mud-flats.

The Jarawas derive most of their animal food resources from humid forests, seashores or shallow waters and mangrove areas. The Jarawas have developed an excellent understanding about their ecology and prevalence of various food animals in different niches like water channels, mangrove mud-flats, seashores and forest areas. Even the young Jarawas and children know about burrows of crabs, wood inhabiting grubs and animals on reef areas.

### **Availability and population of various animals**

Population size simply means the number of individuals of a species in a particular area. Measuring the size of population has not been tried. But from the acquired data an estimate of the total number of species in a habitat has been attempted. With these sampling techniques, acquired data have been useful in comparing the population size of animals in one site with another. Availability status of different animals has been categorized in this account as Abundant, Common and Occasional. These categories have been the perceptive expressions of population sizes of the species, from the viewpoint of field biology. No distinct demarcation lines could be drawn to delineate the above grades but these can fairly express occurrence of a species in an area. This system is indeed widely followed in population studies.

### **Epilogue**

Before proceeding into an appraisal on the Jarawa community and utilization of their resource base, it would be pertinent to arrange available information of the various encampments used by the Jarawas. There are three types of camps and hutments. The first is the community hut, which is occupied for a longer period for more than a month, and measure about 5 to 15 metre in diameter. These huts offer shelter mostly during long monsoon months. The second category of encampment is represented by semi-permanent hutments, which broadly resembles the plan of community huts. Each shelter has a thatched roof which slopes backwards against the prevailing wind. Duration of the stay in such camps seldom exceeds one month or so. The third type of camp consists of a temporary hut for a single family or a group of a few that is ideal for a brief halt (4 to 7 days) during hunting expedition or while visiting neighboring bands. Community huts are always situated in the vicinity of freshwater springs or

streams, and often in places those are sheltered from rapid wind. These features are supported by the fact that coastal as well as inland sites are all located within 2 km of a source of freshwater. In addition to these ecological factors, the selection of coastal sites for encampments is greatly influenced by the opportunities available for fishing in all seasons, as well as by the access to a beach with a large foreshore. These sorts of locations facilitate the women to catch fishes stranded in tide pools with their hand nets, and to collect different molluscs, crabs, etc. The coastal areas that offer situations conducive for resource exploitation throughout the year are definitely favoured for setting permanent encampments. The permanent encampments situated in the peripheral forests close to the ATR (as well as away from coastline) are, however, not very less in number as compared to those near coastlines. The setting up of permanent encampments close to roadsides, especially in the recent past has surely been influenced by the advantage of movement to distant places by vehicles. It has enabled the Jarawas to exploit the resources (and procure food items) from the jungles, which were earlier either inaccessible or accessible by setting temporary hutments only.

The preponderance of plants and animals in the culture and practice of the Jarawas reflects their extensive knowledge of the local flora and fauna. This is supported by the fact that the Jarawas were acquainted with no less than 150 species of plants and 350 species of animals. The knowledge of the Jarawas about the ecology, location, occurrence and beneficial qualities of these plants and animals is quite remarkable. This indicates the importance of forest produce in the subsistence system of the Jarawas. The fact points out that their activities through ages were operative within the deep of the jungles in a manner that is no less than their activities on coastlines. The Jarawas are not a sea-faring community and have no knowledge of canoeing. Their activities do not exceed in seawater far beyond the soil-water interface. Their understanding of the inland flora and fauna, however, is extensive. Clusters of closely grouped shell middens are observed inland as well as along the coast, and an interesting feature projected by these locations are that none of these middens is situated very far from a perennial water source.

It is obvious that an extensive area with sufficient resource base is essential for a hunter-gatherer nomadic tribe for their subsistence. The nature seems to regulate the population size of such a community in a manner that the resource base would not be inadequate for their harmonious survival. The size of the Jarawa population at the time of the study was around 250 and they were living in an area of about 638 sq km. Therefore the resource base available to the Jarawas was apparently quite sufficient. But in a changing scenario, with increasing contact with exogenous people, the Jarawas might acquire some ailments/diseases, which had no occurrence earlier in their community. Correspondingly, with the acceptance of modern medicines (and extension of medical assistance by the Government Administration), the life expectancy and survival rate of the Jarawas would increase to some extent.

**Table 1 Location of plots laid for forest survey**

Plot number	Plot size	Geographical location	
		Latitude	Longitude
<b>Boiab</b>			
1	900 Sq.Mtrs	11° 53' 24" N	92° 39' 44" E
2	3000 Sq. Mtrs	11° 53' 16" N	92° 39' 42" E
3	4200 Sq.Mtrs.	11° 59' 36" N	92° 42' 07" E
4	4900 Sq.Mtrs	12° 02' 31" N	92° 42' 09" E
5	4800 Sq.Mtrs	11° 57' 09.4" N	92° 40' 57.8" E
<b>Thidong</b>			
6	0.250 Hect	12° 7' 41.2" N	92° 43' 19.5" E
7	0.250 Hect	12° 5' 33.3" N	92° 43' 7.3" E
8	0.250 Hect	12° 8' 15.4" N	92° 43' 35.7" E
9	0.250 Hect	12° 9' 13.3" N	92° 44' 41.3" E
10	0.250 Hect	12° 7' 9.8" N	92° 42' 57.4" E
<b>Tanmad</b>			
11	0.250 Hect	12° 26' 56.4" N	92° 46' 31.6" E
12	0.250 Hect	12° 18' 09.8" N	92° 43' 15.4" E
13	0.250 Hect	12° 26' 22.8" N	92° 46' 24.1" E
14	0.250 Hect	12° 28' 17.3" N	92° 45' 57.1" E
15	0.250 Hect	12° 29' 02.0" N	92° 46' 37.9" E
16	1.250 Hect	12° 14' 21.6" N	92° 41' 58.4" E

**Table 2 Quantity assessment on broad scale of edible plant species**

Sl No.	Species	Phase 1	Phase 2	Phase 3	Edible part
1	<i>Alstonia scholaris</i> (Chatian)	Adequate	Adequate	-	Fruit
2	<i>Amomum aculatul</i> (J/haldi)	-	-	Adequate	Fruit
3	<i>Anthocephalus chinensis</i>	-	-	Adequate	Fruit
4	<i>Artabotrys speciosus</i>	-	Adequate	Adequate	Pulp
5	<i>Artocarpus chaplasha</i> (Toung-Peinne)	Adequate	Adequate	Plenty	Fruit
6	<i>Artocarpus lakoocha</i> (Lakuch)	Adequate	Adequate	-	Fruit
7	<i>Baccaurea ramifalora</i> (Khatta phal)	Adequate	Adequate	Plenty	Fruit
8	<i>Calamus andamanicus</i>	Plenty	Plenty	Plenty	Fruit
9	<i>Caryota mitis</i> (Maripatti)	-	-	Plenty	Tender shoot
10	<i>Cycas rumphii</i> (Arguna)	Adequate	Adequate	Plenty	Fruit
11	<i>Desmos cochinchinensis</i>	-	-	Scarce	Fruit
12	<i>Dioscoria bulbifera</i>	Adequate	Adequate	Plenty	Tuber
13	<i>Dioscoria pentaphilla</i>	Adequate	Adequate	Plenty	Tuber
14	<i>Dioscoria vexans</i>	Adequate	Adequate	Plenty	Tuber
15	<i>Dioscoria glabra</i>	Adequate	Adequate	Plenty	Tuber
16	<i>Dillenia andamanica</i>	-	-	Scarce	Fruit
17	<i>Dinochloa andamanica</i>	Adequate	Adequate	Adequate	Tender shoot
18	<i>Diospyros andamanica</i> (Tendu)	Adequate	Adequate	Plenty	Fruit
19	<i>Diploclisia glaucescens</i>	-	Adequate	Adequate	Fruit
20	<i>Dolichandrone speathacea</i>	-	Adequate	-	Fruit

21	<i>Donax cannaeformis</i>	Adequate	-	-	Fruit
22	<i>Dracantomelon dao</i>	Adequate	-	-	Fruit
23	<i>Elaeagnus latifolia</i> (Khatta phal)	-	-	Adequate	Fruit
24	<i>Entada pursetha</i>	Adequate	Adequate	Adequate	Kernel
25	<i>Ficus racemosa</i>	Adequate	-	-	Fruit
26	<i>Garcinia kawa</i> (Cauphala)	-	-	Adequate	Fruit
27	<i>Garcinia xanthochymus</i> (Lal phal)	-	-	Adequate	Fruit
28	<i>Garcinia microstigma</i>	-	Plenty	-	Fruit
29	<i>Garcinia speciosa</i>	-	Plenty	-	Fruit
30	<i>Mangifera andamanica</i> (Jungli aam)	Adequate	Adequate	Plenty	Fruit
31	<i>Manilkara littoralis</i>	-	-	Plenty	Fruit
32	<i>Mimusops elengi</i>	-	-	Plenty	Fruit
33	<i>Mimusops littoralis</i> (Sea mohua)	Adequate	Adequate	Adequate	Fruit
34	<i>Musa sapientum</i> (J/kela)	-	-	Plenty	Fruit
35	<i>Myristaca sp.</i> (Jaiphal)	Adequate	Plenty	-	Fruit
36	<i>Nipa fruticans</i> (Dhani phal)	Plenty	Plenty	Plenty	Nut
37	<i>Oroxylum indicum</i>	-	Adequate	-	Fruit
38	<i>Pandanus andamanensium</i> (Keora)	Adequate	Adequate	Plenty	Fruit
39	<i>Parishia insignis</i> (Red Dhoop)	-	-	Adequate	Fruit
40	<i>Phoenix paludosa</i> (J/khajur)	-	-	Adequate	Fruit
41	<i>Phrynium pubnerva</i>	-	Adequate	Adequate	Fruit
42	<i>Pinanga costata</i> (Kumba)	Adequate	Adequate	Plenty	Tender shoot
43	<i>Pinanga kuhlii</i>	-	-	Adequate	Tender shoot
44	<i>Pinanga manii</i>	-	-	Adequate	Tender shoot
45	<i>Piper betle</i> (Wild Pan)	Plenty	Plenty	-	Leaves
46	<i>Pometia pinnata</i> (Thitkandu)	Adequate	Adequate	Plenty	Fruit
47	<i>Prunus martabanica</i>	-	Adequate	-	Fruit
48	<i>Rubus moluccanus</i>	-	Adequate	-	Fruit
49	<i>Sideroxylon longepetiolatum</i> (Lamba patti)	Adequate	Adequate	Adequate	Fruit
50	<i>Spondias mangifera</i> (Ambara )	-	-	Adequate	Fruit
51	<i>Spondias pinnata</i>	-	-	Adequate	Fruit
52	<i>Sterculia rubiginosa</i>	-	-	Adequate	Seed
53	<i>Terminalia catappa</i>	Adequate	Adequate	Adequate	Nut
54	<i>Terminalia procera</i> (Badam)	Adequate	Adequate	Plenty	Fruit
55	<i>Zimonia americana</i>	-	-	Scarce	Fruit

**Table 3 Plants used by the Jarawas for medicinal purposes**

Name of Species	Jarawa Name if known	Parts used
<i>Ageratum conyzoides</i> L. (Asteraceae)	Aaktel	Tender shoot tied around neck for fever and throat pain
<i>Amomum aculeatum</i> Roxb. (Zingiberaceae)	Uiyaw	Leaf and stem tied around chest for cough and fever; Leaf juice applied on scar

<i>Angiopteris lygodiifolia</i> <i>Roscust.</i> (Angiopteridaceae)	-	Fronds worn around the chest for relief from cough and cold
<i>Chromolaena odorata</i> (L.) R.M. King & Robins (Asteraceae)	-	Leaves used as coagulant, particularly effective on leech-bite
<i>Dracaena angustifolia</i> Roxb. (Agavaceae)	Tidba	Twigs after their rough exterior is removed used for cleaning genitals and wiping menstrual blood
<i>D. brachyphylla</i> Kurz (Agavaceae)	-	-do-
<i>D. pachyphylla</i> Kurz (Agavaceae)	-	-do-
<i>Knema andamanica</i> (Warb.) de wilde (Myristicaceae)	Oro, Aurw	Bark and leaves are used coagulant
<i>Myristica andamanica</i> Hook.f. (Myristicaceae)	Oro	Leaves and twig are worn as garland for relief during sickness. Leaves are as coagulant
<i>Pandanus andamanensis</i> Kurz (Pandanaceae)	Thadow/Paliyu	Tied to the body for relief from body pain
<i>Piper betle</i> L. (Piperaceae)	Intoto	Leaves wrapped around the body for relief from pain.
<i>Pseuduvaria prainii</i> (King.) Merr. (Annonaceae)	Hoomal	Leaves wrapped around the body for relief from cough and fever
<i>Syzygium samarangense</i> (Bl.) Merr. & Perry (Myrtaceae)	-	Leaves wrapped around the head for getting relief during fever
<i>Thottea tomentosa</i> (Bl.) Ding	Udupet	Whole plant worn around

*Hou*  
(Aristolochiaceae)

the chest, head and waist  
as a remedy for cough and  
fever

*Trichosanthes bracteata (Lamk.)  
Voigt.*  
(Cucurbitaceae)

Urubethe

Whole plant wrapped  
around the throat for relief  
in case of throat infection

**Table 3A Medicinal plants used by the Jarawas, as reported by the Ayurved physicians**

S. No.	Botanical name/ Family	Jarawa name	Uses
01	Myristica andamanica  Myristicaceae	Orroh	Leaves are chewed and consumed for relief from cough and throat pain. Leaves are tied on the back after pig hunting to avoid backache and also used as garlands for relief from <i>ullad</i>
02.	Pseuduvaria Prainu  Anonaceae	Homaal	Leaves are tied with bark of Homiyakanada to the effected parts of the body for getting relief in headache and abdomen pain. Homaal leaves are also used to repel bees and for healing cuts
03.	-	Aam Theal (Bhooti pathi)	Hot fomentations are done with leaves for relief from pain, fever, cough, etc.
04.	Orophea katschallica	Tangopachat	Leaves are placed on the chest for relief from chest pain and also used as insect repellent.
05.		Homiyakanada	The aromatic bark fibre is tied as an analgesic
06.	-	Teethakakalla	Leaves are tied around the neck for relief from cough, throat pain and also used as ornamental
07.	-	Kwatho / Vatho	The bark fibre or outer covering is tied as an analgesic. The plant sap is taken orally to get relief from cough and chest pain. The fibre is also used in making bow string

08.	Amomum aculeatum Zingiberacea	(Wild ginger/wild haldi)	The trunk juice is used for repelling bees. Leaves are tied to the chest and forehead for getting relief from fever, cough, chest pain
09.	-	Thaad (wild arecanut)	Used for sitting on leaves during menstrual period and also during post partum bleeding. They also make arrows from its wood. Plant material also used a decorative item
10.	-	Tothanpan	Trunk wood is used for making bows
11.	-	Kekhad	Bark is used as chest guard
12.	-	Thuyya (Dhanipathi)	Decorations, covering the alam covered areas

**Table 4 Plants used for construction of shelter by the Jarawas**

Name of Species	Jarawa Name if known	Parts used
<b>Plants for shelter</b>		
<i>Antidesma velutinum</i> Tul. (Euphorbiaceae)	-	Stem for house post
<i>Areca triandra</i> Roxb. (Arecaceae)	Tulu	-do-
<i>Baccaurea ramiflora</i> Lour. (Euphorbiaceae)	Keen	-do-
<i>Calamus andamanicus</i> Kurz (Arecaceae)	Ottang	Leaf for thatching
<i>C. grandis</i> Kurz (Arecaceae)	Totanahi	-do-
<i>C. longisetus</i> Griff. (Arecaceae)	-	-do-
<i>C. pseudorivalis</i> Becc. (Arecaceae)	Tiele	-do-
<i>C. viminalis</i> Willd. (Arecaceae)	Totanahi	-do-



<i>Caryota mitis</i> Lour. (Arecaceae)	Indau	-do-
<i>Daemonorops kurzianus</i> Hook. f. (Arecaceae)	-	-do-
<i>Knema andamanica</i> (Warb.) de Wilde (Myristicaceae)	Oro, Aurw.	Stem for house post
<i>Lagerstroemia hypoleuca kurz</i> (Lythraceae)	Leiya	-do-
<i>Leea indica</i> (Burm.f.) Merr. (Leeaceae)	Ele	-do-
<i>L. macrophylla</i> Roxb. ex Hornem (Leeaceae)	Elea	-do-
<i>Licuala peltata</i> Roxb. (Arecaceae)	Popo	Leaf for thatching
<i>L. macrophylla</i> Roxb. ex Hornem (Arecaceae)	-	-do-
<i>Musa sapientum</i> L. (Musaceae)	Chone	-do-
<i>Mussaenda macrophylla</i> Wall. (Rubiaceae)	Bukhala	Stem for house post
<i>Nypa fruitcans</i> Wurmmb. (Arecaceae)	Thuiya	Leaf for thatching
<i>Rinorea bengalensis</i> (Wall.) O. Kuntze (Violaceae)	-	Stem for house post

**Table 5 Plants used for adornment by the Jarawas**

Name of Species	Jarawa Name (if known)	Parts used
<b>(i). Ornamentation</b> (Head Band, Necklace, Garland, Armlet)		

<i>Acacia auriculiformis</i> A. cunn. (Mimosaceae)	Dema	Flowers
<i>Adenantha pavonina</i> L. (Mimosaceae)	-	Flowers
<i>Amomum aculeatum</i> Roxb. (Zingiberaceae)	Uiyaw	Leaves
<i>Anaxogorea luzonensis</i> A. Grey (Annonaceae)	-	Flower
<i>Artabotrys speciosus</i> Kurz ex Brum f. (Annonaceae)	Thewagelib	Fruits used in making garlands
<i>Barringtonia asiatica</i> (L.) Kurz (Lecythidaceae)	Mangyanw	Flowers
<i>B. racemosa</i> (L.) Spreng (Lecythidaceae)	Mangyanw	Flowers
<i>Bombax insigne</i> Wall. (Bombacaceae)	Didu	Flowers
<i>Caesalpinia crista</i> L. (Caesalpinaceae)	-	Flowers
<i>Calophyllum inophyllum</i> L. (Clusiaceae)	-	Flowers
<i>Canavalia cathartica</i> Thou. (Fabaceae)	-	Flowers
<i>Cassia alata</i> (Caesalpinaceae)	-	Flowers
<i>Cerbera manghas</i> L. (Apocynaceae)	Hokotat	Flowers
<i>Chonemorpha fragrans</i> (Moon.) Alst. (Apocynaceae)	-	Flowers
<i>Codiocarpus andamanicus</i> (Kurz)	-	Flowers
Howard	.	.

(Icacinaceae)		
<i>Combretum latifolium</i> Bl. (Combretaceae)	Inetoa	Fruits
<i>Cymbidium aloefolium</i> (L.) Sw. (Orchidaceae)	-	Flowers
<i>Cynometra ramiflora</i> (Frost.) Seem (Caesalpinaceae)	Antang	Flowers to make garlands
<i>Dendrobium crumenatum</i> Sw. (Orchidaceae)	Taon	Flowers
<i>D. formosum</i> Roxb. (Orchidaceae)	-	Flowers
<i>D. secundum</i> (Bl.) Lindl. (Orchidaceae)	-	Flowers
<i>Derris trifoliata</i> Lamk. (Fabaceae)	-	Flowers
<i>Dipterocarpus griffithii</i> Miq. (Dipterocarpaceae)	Wathoa	Flowers, flowering time indicates the advent of the honey – gathering season
<i>D. incanus</i> Roxb. (Dipterocarpaceae)	Aluk	-do-
<i>D. turbinatus</i> Gaertn.f. (Dipterocarpaceae)	-	-do-
<i>Donax cannaeformis</i> (Forst F.)  <i>K. Schum.</i> (Marantaceae)	Leedan	Flowers
<i>Erythrina variegata</i> L. (Fabaceae)	Leura	Flowers
<i>Fagraea racemosa</i> Jack. ex Wall. (Loganiaceae)	Viseag	Flowers
<i>Globba pauciflora</i> King	Thitangalo	Flowers used in

<i>ex Baker.</i> (Zingiberaceae)		headband, waistband & necklace
<i>Guettarda speciosa L.</i> (Rubiaceae)	-	Flowers
<i>Hernandia peltata Meissn.</i> (Hernandiaceae)	-	Flowers
<i>Hibiscus tiliaceus L.</i> (Malvaceae)	Horpo / Togay	Flowers
<i>Hoya parasitica Wall.</i> (Asclepiadaceae)	Occhum	Flowers
<i>Ipomoea pes-carpae (L.) R.Br.</i> (Convolvulaceae)	-	Flowers
<i>Ixora finlaysoniana Wall</i> . <i>ex G. Don.</i> (Rubiaceae)	Oha	Flowers
<i>I. grandifolia Zoll. &amp; Morr.</i> (Rubiaceae)	-	Flowers
<i>Lagerstroemia hypoleuca Kurz</i> (Lythraceae)	Leiya	Flowers
<i>Licuala peltata Roxb.</i> (Arecaceae)	Popo	Leaves dissected and worn
<i>L. spinosa Wurmb.</i> (Arecaceae)	-	-do-
<i>Macranga peltata (Roxb.) Muell.-Arg.</i> (Euphorbiaceae)	Aludan	Flowers
<i>M. tanarius (L.) Muell.- Arg.</i> (Euphorbiaceae)	-	Flowers
<i>Memecylon andamanicum King</i> (Memecylaceae)	-	Flowers
<i>Mikania cordata</i> (Asteraceae)	-	Flowers
<i>Musa sapientum L.</i>	Chone	Tender leaves finely

(Musaceae)		dissected and worn
<i>M. textilis</i> Nees. (Musaceae)	Chone	Flowers and tender leaves used in girdles
<i>Mussaenda macrophylla</i> Wall. (Rubiaceae)	Bukhala	Flowers and leaves
<i>Nypa fruticans</i> Wurmbr. (Arecaceae)	Thuiya	Leaves dissected and worn as garlands or girdles
<i>Ochna integerrima</i> (Lour.) Merr. (Ochnaceae)	Hopenana	Flowers
<i>Otanthera celebica</i> Bl. (Melastomataceae)	Kukuma	Flowers
<i>Pavetta indica</i> L. (Rubiaceae)	-	Flowers
<i>Pinanga manii</i> Becc. (Arecaceae)	Thulug	Flowers
<i>P. kuhlii</i> Bl. (Arecaceae)	Tulug	Inflorescence
<i>Pisonia umbellifera</i> (Forst.) Seem (Nyctaginaceae)	-	Flowers
<i>Pseuduvaria prainii</i> (King.) Merr. (Annonaceae)	Homal	Tender leaves
<i>Rauvolfia sumatrana</i> (Apocynaceae)	Teepod	Flowers
<i>Sophora tomentosa</i> L. (Fabaceae)	-	Flowers
<i>Strongylodon ruber</i> Vogel (Fabaceae)	-	Flowers
<i>Syzygium samarangense</i> (Bl.) Merr. & Perry (Myrtaceae)	-	Flowers
<i>Tabernaemontana crispa</i> Roxb.	Tahween	Flowers

(Apocynaceae)

<i>Thespesia populnea</i> Corra (Malvaceae)	-	Flowers
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**(ii) Sea weeds as Ornaments :**

<i>Caulerpa racemosa</i> (Turn.) (Chlorophyceae)	Aale	The creaper used as necklace
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<i>Halimeda opuntia</i> (Turn.) Lamour (Chlorophyceae)	Aale	The creaper used as necklace
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<i>Sargassum wightii</i> Grew. (Phaeophyceae)	Aale	The creaper used as necklace
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<i>Amphiroa anceps</i> (Lamk.) Decsne. (Rhodophyceae)	Pilobaha	The creaper used in necklace making
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**Table 6 Plants used during honey collection by the Jarawas**

<b>Name of Species</b>	<b>Jarawa name, if known</b>	<b>Parts used</b>
<b>i Bee repellents:</b>		
<i>Alpinia manii</i> King ex Baker. (Zingiberaceae)	Ooyekwalin	Leaves
<i>Amomum aculeatum</i> Roxb. (Zingiberaceae)	Uiyaw	Juice from leaves and stems
<i>Orophea katschallica</i> Kurz. (Annonaceae)	Tangopa jath	Juice of leaves

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**Table 7 Plants used for various other purposes**

Name of Species	Jarawa name (if known)	Parts used
<b>(i). Bows and Arrows:</b>		
<i>Ancistrocladus tinctorius</i> (Lour.) Merr. (Ancistrocladaceae)	-	Bark fibre for making bowstring
<i>Anodendron manubrium</i> Merr. (Apocynaceae)	-	Bark fibre for making bowstring
<i>Areca triandra</i> Roxb. (Arecaceae)	Tulu	Stem for making arrow
<i>Calamus andamanicus</i> Kurz (Arecaceae)	Otaang	Stem
<i>Desmos dasymaschalus</i> (Bl.) Safford (Annonaceae)	-	Bark for making bowstring
<i>Dinochloa scandens</i> (Bl. Ex Nees.) O. Kuntze (Poaceae)	-	Arrow made form stem
<i>Ficus scandens</i> Roxb. (Moraceae)	Wetho	-
<i>Murraya paniculata</i> (L.) Jack (Rutaceae)	-	Wooden spear and arrow made from stem
<i>Oxytenanthera nigrociliata</i> Monro (Poaceae)	-	Stem for making arrow
<i>Polyalthia parkinsonii</i> Hutch. (Annonaceae)	-	Bowstring made from bark
<i>Sageraea elliptica</i> (A.Dc.) Hook.f. & Thomson (Annonaceae)	Thotanbad tang	Stem for making bow
<b>(ii). Chest Guard (Kekad)</b>		
<i>Planchonia valida</i> ( Bl.) Bl. (Lecythidaceae)	Wonebo	Bark
<i>Polyalthia parkinsonii</i> Hutch. (Annonaceae)	-	Bark
<i>Sterculia villosa</i> Roxb. (Sterculiaceae)	Tahat	Bark
<b>(iii). Basket :</b>		
<i>Calamus palustris</i> Griff. (Arecaceae)	-	Strip of stem
<i>C. pseudorivalis</i> Becc. (Arecaceae)	Tiele	-do-
<i>Korthalsia laciniosa</i> Mart. (Arecaceae)	Bagatho	-do-
<i>Licuala peltata</i> Roxb. (Arecaceae)	Popo	Leaves spread inside basket
<b>(iv). Rope/Cordage/Fibre</b>		
<i>Anodendron manubrium</i> Merr. (Apocynaceae)	-	Bark strip as rope

<i>Antidesma velutinum</i> Tul. (Euphorbiaceae)	-	-do-
<i>Calamus longisetus</i> Griff. (Arecaceae)	-	Strip of stem for making string
<i>C. pseudorivalis</i> Becc. (Arecaceae)	Tiele	-do-
<i>Combretum latifolium</i> Bl. (Combretaceae)	Inettoa	Stem as rope
<i>Dendrobium aphyllum</i> (Orchidaceae)	-	Thread made from stem fiber
<i>D. formosum</i> Roxb. (Orchidaceae)	Taan	Thread made from stem fiber
<i>D. secundum</i> (Orchidaceae)	-	Thread made from stem fiber
<i>Desmos dasymaschalus</i> (Bl.) Safford (Annonaceae)	-	Bark strip as rope
<i>Hibiscus tiliaceus</i> L. (Malvaceae)	Harpo	Bark strip made into a belt for carrying baby
<i>Planchonia valida</i> Bl. (Lecythidaceae)	-	Bark strip for making cordage
<i>Pterocymbium tinctorium</i> (Balancho) Merr. (Sterculiaceae)	-	Bark strip as rope
<i>Sterculia villosa</i> Roxb. (Sterculiaceae)	Tahat	-do-
(v). <b><u>Pone (Torch)</u></b> <i>Canarium euphyllum</i> Kurz (Burseraceae)	Pone	Resin powder wrapped in leaves, tied at the end of a stick and burnt while moving at night
<i>Licuala peltata</i> Roxb. (Arecaceae)	Popo	Leaves for wrapping resin powder as mentioned above
(vi). <b>Narcotics</b> <i>Nicotiana tabacum</i> L. (Solanaceae)	Chukha	Leaves (acquired habit)
(vii). <b>Stimulant</b> <i>Piper betle</i> L. (Piperaceae)	Intoto	Leaves
(viii). <b>Water during emergency</b> <i>Calamus andamanicus</i> Kurz (Arecaceae)	Ottang	Stem juice
(ix). <b>Utensils</b> <i>Areca triandra</i> Roxb. (Arecaceae)	Tulu	Spathe
(x). <b>Mat/Bed Sheet</b> <i>Dracaena angustifolia</i> Roxb.	Chikbag	Stem



(Agabaceae) <i>Licuala peltata</i> Roxb.	Popo	Leaf
(Arecaceae) <i>Pterospermum acerifolium</i> Willd. Daeue	Dau	Leaf
(Sterculiaceae) (xi). <b>Mosquito repellent</b> <i>Canarium euphyllum</i> Kurz	Tamboaho	Resin
(Burseraceae) <i>Areca triandra</i> Roxb.	Tulu	Pith
(Arecaceae) <i>Pterospermum acerifolium</i> Willd. Daeue (Sterculiaceae)	Dau	Leaves (women sit on leaves during menstruation period)
(xii). <b>Brush</b> <i>Pongamia pinnata</i> (L.) Pierre	Aichun	Twig used sometimes for cleaning teeth
(Fabaceae) (xiii). <b>Playball</b> <i>Cerbera manghas</i> L.	Hokokat	Fruit
(Apocynaceae) (xiv). <b>Sustaining fire</b> <i>Canarium euphyllum</i> Kurz (Burseraceae)	Tamboaho	Resin
(xv). <b>Trap</b> <i>Plecosperrum andamanicum</i> King		Twigs spread on ground to trap pigs
(Moraceae) (xvi) <b>Oro (Dye)</b> <i>Myristica andamanica</i> Hook.f.	Oro	Stem juice for making dye
(Myristicaceae) (xvii) <b>U-hu (Honey bucket)</b> <i>Oroxylum indicum</i> (L.) Kurz	Thade	Bole or wooden block scooped out to make honey bucket
(Bignoniaceae) <i>Pajanelia longifolia</i> (Willd.) K. Schum.	Thaade	-do-
(Bignoniaceae) <i>Sterculia villosa</i> Roxb. (Sterculiaceae)	That	-do-

**Table 8 Animals eaten by the Jarawas**

(Availability status: Abundant A; Common C; Occasional O)

<b>A. Animal as Food</b>					
<b>Group</b>	<b>Name of animal</b>	<b>Common name</b>	<b>Family</b>	<b>Consumed by</b>	<b>Availability Status</b>
<b>Mammal</b>	<i>Sus scrofa andamanensis</i>	Wild pig	Suidae	Roasting, boiling	C
	<i>Dugong dugon</i>	Sea cow	Dugongidae	?	O
<b>Aves</b>	<i>Dendrocygna javanica</i>	Lesser whistling teal	Anatidae	Roasting	C
	<i>Nattapus coromandelianus</i>	Cotton teal	”	”	C
	<i>Psittacula alexandri</i>	Redbreasted parakeet	Psittacidae	”	C
	<i>Psittacula eupatria</i>	Alexandrine parakeet	”	”	C
	<i>Chalcophaps indica</i>	Emerald dove	Columbidae	”	C
	<i>Ducula aenea</i>	Green Imperial pigeon	”	”	C
	<i>Ducula bicolor</i>	Pied Imperial pigeon	”	”	C
	<i>Amaurornis phoenicurus</i>	White breasted waterhen	Rallidae	”	C
<b>Reptilia</b>	<i>Varanus salvator andamanensis</i>	Andaman water monitor	Varanidae	Roasting	C
	<i>Chelonia mydas</i>	Green sea turtle	Cheloniidae	Boiling, eggs-boiling	C
	<i>Lepidochelys olivacea</i>	Olive Ridley turtle	”	”	C
<b>Pisces</b>	<i>Thryssa baelama</i>	Baelama Anchory	Engraulididae	Roasting/boiling	A
	<i>Thrysa setirostris</i>	Longjaw thryssa	”	”	C
	<i>Thryssa malabarica</i>	Malabar thryssa	”	”	C
	<i>Chanos chanos</i>	Milk-fish	Chanidae	”	A
	<i>Arius macronotocanthus</i>	-	Ariidae	”	O
	<i>Arius sumatranus</i>	-	”	”	C
	<i>Arius thalassinus</i>	Giant marine cat-fish	”	”	C
	<i>Strongylura strongylura</i>	Roundtail needle fish	Belonidae	”	C
	<i>Tylosurus crocodiles</i>	Giant Longtom	”	”	C
	<i>Tylosurus gigantea</i>	-	”	”	C
<i>Hemiramphus far</i>	Black-barred halfbeak	Hemiramphidae	”	C	

<i>Hemiramphus tutkai</i>	Lutkei halfbeak	”	”	C
<i>Hyporamphus limbatus</i>	Valencienne’s halfbeak	Hemiramphidae	Roasting/ boiling	C
<i>Hyporamphus dussumieri</i>	Dussumier’s halfbeak	”	”	C
<i>Zenarchopterus gilli</i>	-	”	”	C
<i>Lates calcarifer</i>	Giant seaperch	Centropomidae	”	C
<i>Megalops cyprioides</i>	Indo-Pacific Tarpon	Megalopidae	”	C
<i>Plotosus lineatus</i>	Striped cat-fish eel	Plotosidae	”	A
<i>Cociella crocodila</i>	-	Platycephalidae	”	C
<i>Platycephalus indicus</i>	Indian flat-head	”	”	C
<i>Epinephelus malabaricus</i>	Malabar reefcod	Serranidae	”	A
<i>Epinephelus ongus</i>	-	”	”	C
<i>Epinephelus fuscoguttatus</i>	Brown-marbled grouper	”	”	C
<i>Terapon jarbua</i>	Jarbua terapon	Teraponidae	”	C
<i>Terapon puta</i>	Small-scaled banded grunter	”	”	C
<i>Pelates quadrilineatus</i>	Four-lined therapon	”	”	C
<i>Sillago sihama</i>	Silver sillago	Sillaginidae	”	A
<i>Carangoides caeruleopinnatus</i>	Bluefin kingfish	Carangidae	”	A
<i>Carangoides malabaricus</i>	Malalar trevally	”	”	C
<i>Selaroides leptolepis</i>	Yellow stripe trevally	”	”	C
<i>Trachinotus blochii</i>	Snubnose pampano	”	”	C
<i>Megalaspis cordyla</i>	Hardtail scad	”	”	C
<i>Ambassis bruensis</i>	-	Ambassidae	”	O
<i>Ambassis commersoni</i>	Commerson’s glassy perchlet	”	”	C
<i>Ambassis dussumieri</i>	-	”	”	O
<i>Gazza minuta</i>	Toothed pony fish	Leiognathidae	”	A
<i>Leiognathus bindus</i>	Orangefin pony fish	”	”	C
<i>Leiognathus blochii</i>	Bloch’s pony fish	”	”	A
<i>Leiognathus berbis</i>	Lined pony fish	”	”	C
<i>Leiognathus dussumieri</i>	Dussumier’s pony fish	”	”	C
<i>Leiognathus equulus</i>	Common pony fish	”	”	C
<i>Leiognathus fasciatus</i>	Striped pony fish	Leiognathidae	Roasting/ boiling	A

<i>Leiognathus splendens</i>	Splendid pony fish	”	”	C
<i>Leiognathus longipinis</i>	Smithurst’s pony fish	”	”	C
<i>Secutor insidiator</i>	Pugnose ponyfish	”	”	C
<i>Lutjanus biguttatus</i>	Two spot banded snapper	Lutjanidae	”	A
<i>Lutjanus eherebergi</i>	-	”	”	O
<i>Lutjanus malabaricus</i>	Malabar red snapper	”	”	C
<i>Lutjanus argentimaculatus</i>	Mangrove red-snapper	”	”	A
<i>Lutjanus russelli</i>	Russell’s snapper	Lutjanidae	”	A
<i>Lutjanus johnii</i>	John’s snapper	”	”	C
<i>Lutjanus sebae</i>	Emperor red-snapper	”	”	C
<i>Lobotes surinamensis</i>	Brown Tripletail	Lobotidae	”	O
<i>Nemipterus bleekeri</i>	Bleeker’s thread fin-bream	Nemipteridae	”	C
<i>Nemipterus japonicus</i>	Japanese thread fin-bream	”	”	C
<i>Nemipterus mesoprion</i>	Redfilament thread fin-bream	”	”	A
<i>Scatophagus argus</i>	Spotted butterflyfish	Scatophagidae	”	A
<i>Toxotes chatareus</i>	Archer fish	Toxotidae	”	C
<i>Toxotes jaculator</i>	”	”	”	C
<i>Gerres filamentosus</i>	Whipfin mojarra	Gerridae	”	C
<i>Gerres poeti</i>	Silvery mojarra	”	”	C
<i>Gerres oyena</i>	Common mojarra	”	”	C
<i>Gerres oblongus</i>	Oblong mojarra	”	”	C
<i>Gereomorpha setifer</i>	Black-tipped mojdrra	”	”	C
<i>Plectrorhynchus gibbosus</i>	-	Haemulidae	”	C
<i>Monodactylus argenteus</i>	Silver-batfish	Monodactylidae	”	C
<i>Upeneus sulphureus</i>	Yellow goatfish	Mullidae	”	C
<i>Upeneus tragula</i>	Darkband goatfish	”	”	C
<i>Upeneus vittatus</i>	Yellow striped goat fish	”	”	C
<i>Mulloidis vanicolensis</i>	-	”	”	C
<i>Mulloidis flavolineatus</i>	Slender gold band goat fish	”	”	C

<i>Parupeneus barberinus</i>	Goat fish	Mullidae	Roasting/ boiling	C
<i>Parupeneus bifasciatus</i>	”	”	”	C
<i>Drepane punctata</i>	Spotted drepane	Drepanidae	”	C
<i>Crenimugil crenilabis</i>	Mullet	Mugilidae	”	C
<i>Liza melinoptera</i>	Mullet	”	”	C
<i>Liza vaigiensis</i>	Diamond-scale grey mullet	”	”	C
<i>Liza craniata</i>		”	”	O
<i>Liza parsia</i>	Gold spot mullet	”	”	A
<i>Liza subviridis</i>	Greenback grey mullet	”	”	A
<i>Liza tade</i>	Tade grey mullet	”	”	A
<i>Valamugil buehanani</i>	Buchanan’s blue-tail mullet	”	”	C
<i>Valamugil cunnesius</i>	Long fin mullet	”	”	A
<i>Valamugil seheli</i>	Blue spot grey mullet	”	”	C
<i>Acanthurus mata</i>	Convict surgeon fish	Acanthuridae	”	C
<i>Acanthurus triostegus</i>	Surgeon fish	”	”	C
<i>Acanthurus lineatus</i>	”	”	”	C
<i>Acanthurus xanthopterus</i>	Cuvier’s surgeon fish	”	”	C
<i>Siganus canaliculatus</i>	White spotted spinefoot	Siganidae	”	C
<i>Siganus argenteus</i>	-	”	”	O
<i>Siganus javus</i>	Streaky spinefoot	”	”	C
<i>Etroplus suratensis</i>	-	Cichlidae	”	C
<i>Rhinecanthus rectangulus</i>	File fish	Balistidae	”	C
<i>Rhinecanthus aculeatus</i>	”	”	”	C
<i>Glossogobius giuris</i>	-	Gobiidae	”	C
<i>Polynemus indicus</i>	Indian thread fin	Polynemidae	”	C
<i>Polynemus plebius</i>	Common thread fin	”	”	C
<i>Eleutheronema tetradactylum</i>	Four finger thread fin	”	”	C
<i>Halichoeres hortulanus</i>	-	Labridae	”	C
<i>Channa punctatus</i>	Snake head fish	Channidae	”	C
<i>Butis butis</i>	-	Eleotridae	Roasting / boiling	A

	<i>Eleotris fusca</i>	-	“	“	A
	<i>Ophioeleotris aporos</i>	-	“	“	O
	<i>Ophiocara porocephala</i>	-	“	“	O
	<i>Scarus ghobban</i>	Flame parrot fish	Scaridae	“	A
	<i>Scarus rubroviolaceous</i>	Parrot fish	“	“	O
	<i>Sphyraena flavicauda</i>	Short-jawed barracuda	Sphyraenidae	“	O
	<i>Sphyraena obtusata</i>	Obtuse barracuda	“	“	O
<b>Mollusca</b>	<i>Geloina erosa</i>	Geloina clam	Corbiculidae	Boiling	A
	<i>Batissa violacea</i>	Violet clam	”	”	A
	<i>Trochus niloticus</i>	Top shell	Trochidae	”	C
	<i>Turbo brunneus</i>	Brown Pacific turban	Turbinidae	”	C
	<i>Turbo argyrostoma</i>	Silver mouth turban`	”	”	C
	<i>Tridacna maxima</i>	Elongated giant clam	Tridacnidae	”	C
	<i>Tridacna squamosa</i>	Fluted giant clam	”	”	C
	<i>Lambis lambis</i>	Common spider conch	Strombidae	”	C
	<i>Lambis chiragra</i>	Chiragra spider conch	”	”	C
	<i>Trachycardium elongatum</i>	Elongate cockle	Cardiidae	”	C
	<i>Anadara granosa</i>	Granular ark	Arcidae	”	C
	<i>Nerita articulata</i>		Neritidae	”	A
	<i>Nerita polita</i>	Polish nerit	Neritidae	”	A
	<i>Nerita albicilla</i>	Ox-palate nerit	”	”	A
	<i>Nerita undata</i>	Waved nerit	”	”	A
	<i>Nerita costata</i>	Costate nerit	”	”	A
	<i>Thais hippocastanum</i>	Chestnut rock shell	Muricidae	”	A
	<i>Thais tuberosa</i>	Tuberose rockshell	”	”	A
	<i>Saccostrea cucullata</i>	Hooded oyster	Ostridae	”	A
	<i>Petellioda saccharina</i>	Sugar limpet	Acmaeidae	”	C
	<i>Acanthopleura spiniger</i>	Spiny chiton	Chitonidae	”	C
	<i>Cypraea tigris</i>	Tiger cowry	Cypraeidae	”	C
	<i>Cassis cornuta</i>	Horned helmet	Cassidae	”	O
	<i>Hapalochlaena maculosa</i>	Octopus	Octopodidae	”	O
	<i>Lamellidens marginalis</i>	Freshwater mussel	Unionidae	Boiling	O
	<i>Turbo cinereus</i>	Lunella turban	Turbinidae	“	A

<b>Crustacea</b>	<i>Pleuroploca trapizium</i>	Horse conch	Fasciolaridae	“	O
	<i>Panulirus versicolor</i>	Spiny lobster	Panuliridae	Boiling	C
	<i>Palaemon debilis</i>	Prawn	Palaemonidae	”	C
	<i>Penaeus semisulcatus</i>	”	Penaeidae	”	C
	<i>Penaeus indicus</i>	”	”	”	A
	<i>Metapenaeus coniger</i>	”	”	”	C
	<i>Metapenaeus dobsoni</i>	”	”	”	C
	<i>Metapenaeus affinis</i>	Prawn	Penaeidae	Boiling	C
	<i>Metapenaeus brevicornis</i>	”	”	”	C
	<i>Scylla serrata</i>	Giant Mud Crab	Portunidae	”	C
	<i>Uca dussumieri</i>	Fidler Crab	Ocypodidae	”	A
	<i>Thalamita crenata</i>	Swimming Crab	Portunidae	”	C
	<i>Thalamita prymna</i>	”	”	”	C
	<i>Sesarma taeniolata</i>	Marsh Crab	Grapsidae	”	C
	<i>Sesarma bidens</i>	”	”	”	C
<i>Charybdis orientalis</i>	Swimming Crab	Portunidae	”	C	
<b>Insecta:</b> <b>Coleoptera</b>	<i>Megopis sulcipennis</i>	Longicorn beetle	Cerambycidae	Grub-roasting/ raw	C
	<i>Gnaphaloryx opacus</i>	Stag beetle	Lucanidae	Grub-roasting	C
	<i>Macrolinus andamanensis</i>	Flat bark beetle	Passalidae	“	C

## B. Animal Product as Food

Group	Name of Animal	Common Name	Family	Name of Product	Availability Status
<b>Insecta:</b> <b>Hymenoptera</b>	<i>Apis dorsata</i>	Honey bee	Apidae	Honey	A
	<i>Apis cerana indica</i>	”	”	”	A

### C. Medicinal Use

Group	Name of Animal	Common Name	Portion Used	Treatment of	Availability Status
Reptilia	<i>Varanus salvator andamanensis</i>	Andaman water monitor	Body fat	Body pain	C

### D. Ornamental Use

Group	Name of animal	Common name	Portion used	Type of ornament	Availability status
Mollusca	<i>Cypraea caputserpentis</i>	Cowry	Shell	Necklace/ Waist girdle	A
	<i>Cypraea moneta</i>	Money cowry	”	”	A
	<i>Nerita polita</i>	Polish nerit	”	Waist girdle	A
	<i>Nerita articulata</i>		”	”	A
	<i>Nerita albicilla</i>	Ox-palate nerit	”	”	A
	<i>Nerita undulata</i>	Waved nerit	”	”	A
	<i>Nerita costata</i>	Costate nerit	”	”	A

**Table 9 Pattern of animal food intake by the Jarawas in different types of habitat**

Location of habitats	Animal foods/product	Collecting Zones
Open Seashore	Honey, wild pigs, molluscs, fishes, turtles	Dense forests, intertidal areas of seashores, water channels
Creek	Honey, wild pigs, fishes, molluscs, crabs, prawns, water monitor	Dense forests, mangroves, mud-flats, littoral forests
Roadside/away from coastline	Honey, water monitors, wild pigs, fishes, molluscs, grubs	Dense forests, peripheral forests, water channels
Deep forest away from coastline	Honey, water monitors, wild pigs, fishes, molluscs, grubs	Dense forests, peripheral forests, water channels