

JUNGLE SURVIVAL

(Illustrated Lecture - 100 Kodachrome Slides)

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Introduction:

The information and technics that will enable you to survive in the jungle areas of the world are basically the ability to obtain food and water, to improvise shelters, make fires, cook foods, to travel and to overcome or avoid the physical and biological hazards encountered. The general problem of meeting man's essential needs is no different than in other regions of the earth; the details however vary considerably. Nevertheless, a good woodsman from the temperate regions can make out in a strange tropical environment and soon master the use of new materials and improvise old technics to meet the unfamiliar conditions.

To survive in the jungle, the average American requires the following as minimum equipment.

Lightweight clothing	Magnifying glass and waterproof
Knife and machete	matches
Compass	Lightweight poncho and jungle
Rifle and ammunition	hammock
Gill net, fish hooks and line	Malaria drugs and mosquito head net

A detailed description of this equipment and its use is covered in the lecture on the Survival Kit. Nevertheless, I would like to stress that a good machete is an absolute necessity. The possession of an accurate rifle such as the Hornet will be a tremendous advantage over the 38 and 45 sidearms and the carbine of World War II. The lightweight

any jungle hammock with mosquito net sidewalls is an ideal shelter and bed. The para-hammock will substitute, but does not fill the need of this practical and well-designed piece of equipment.

The jungle areas of Brazil, the Belgian Congo, and Asia are so tremendous in expanse that a downed airman might have to travel thousands of miles requiring months of primitive living before reaching civilization. The problem of surviving in the jungle is comparable in magnitude to the task confronting a castaway at sea or a man downed in polar regions. It requires physical stamina, survival know-how, high morale and at least a minimum of equipment. During World War II many airmen made their way safely through the jungles of the Pacific Area. You can do what others have done.

1. Almost any heavily vegetated area in tropical regions is referred to as jungle. Here you see a primary jungle of the Pacific islands.

2. 2 - 3 - 4 -5. Primary jungles are generally characterized by great trees and a network of vines or lianas. The species of trees and vines that make up such forests, vary considerably throughout the world, but in a Palawan jungle and this picture of a Panama jungle. The interior forest floor is often relatively open, but the forest margins are dense thickets of trees and vines. Thus the most difficult travel problems are at the periphery of the jungle rather than the interior. The forest canopy may be 200 feet above the ground and so dense that little direct sunlight strikes the earth.

(4 & 5). Sometimes the flowers and fruits are borne directly on the tree trunks themselves or on specialized leafless branches.

6. Let's look at some of the so-called jungles. Here is a candlenut forest, dark and eerie.

7. And here a primary rain forest of great trees, vines or lianas.

8. Quite different is the ficus, cycad forest of the Mariana Islands. The strangler fig at the left gives a popular concept of what jungle country should look like.

9. Secondary forests are those where the primary forest has been cut or burned and a rank, almost impenetrable growth replaces it. This picture shows the edge of the primary and secondary forests.

10. In close-up it may appear somewhat like this, presenting a sheer wall of vegetation.

11. - 12. The fern tree forests of lace-like beauty are quite different from this high mountain diuax forest with its open grassy parks and spreading trees.

13. There are semi-desert jungles of thorn trees, palms and cacti where a scarcity of water will be a major problem to a survivor.

14 - 15. And mangrove forests where the mangrove stems and roots present an impenetrable barrier to travel and you must seek the more open water channels in order to travel at all. The pictures of the forest types you have just seen should give you some idea of what jungles are like. In order that we can treat specific details as well as general principles of jungle survival, we will confine our discussion largely to the task of surviving in the tropical forests of the Pacific area. Much of the information can be applied to other jungle areas of the world.

16. Various regions of the earth present their own unique obstacles to travel. In the far north low temperatures and deep snow are factors limiting travel; in the mountains it is rough terrain that exacts a heavy toll on human energy; in swamp land it is the fight against poor footing and rank vegetation, while in the jungle the oppressive heat and mass and sameness of the vegetation are the major obstacles of confronting a traveler. In all jungle travel, better results are obtained by following rivers and streams. Whether jungle travel be through mangrove forests, thick secondary jungle, primary jungle or high mountain forests, there is seldom any extent of view, few if any landmarks for fixes, and a monotonous sameness that hems in the traveler and quickly confuses him if he has neither a trail or a stream to follow.

17. Native or game trails usually follow the banks of large rivers. You can afford to travel many extra miles on a trail to every mile cross-country. In the absence of trails the best traveling is in small stream beds, while large streams and rivers are best navigated by rafting.

18. Bamboo, being hollow, is ideal for raft construction and can be used green.

19. Mountain jungle streams are fast-running and flood quickly. It may be necessary to cross such streams frequently in a day's travel. A knowledge of swimming in rapids, selecting fording sites and wading swift currents is of great practical value.

20 - 21. The greatest annoyances to travel in the Pacific jungles are thorny rattans and small animal pests such as mosquitos, ants and leeches. Rattans are trailing, climbing palms with recurved thorny stems and tendrils that rip and tear skin and clothing. The smooth rattans form unyielding networks of vines that hinder a traveler at every turn. It is next to impossible to work through some thickets of rattan without becoming entangled in the thorns. A machete is useful only if it is sharp. You cannot tear yourself free by force, as you will only set the thorns deeper. It is far wiser to stop and carefully unfasten each thorn or if caught by one tendril to make a slow spin away from it.

22. When traveling game trails it is well to keep an eye open for native traps and snares. This spear trap set for wild pigs could seriously injure a man.

23. Water is a basic necessity and even in the tropical rain forests it can be a problem to the survivor. Some types of jungles are quite dry, others have a wet and dry season, while high mountain forests are

almost continually wet. Primary jungles are well supplied with streams and rivers and rainwater is generally available. In wilderness regions, stream water is safe to drink.

24. Rainwater collected as it falls, or trapped in pockets on the jungle floor, is safe to drink; but many serious diseases can be contracted by drinking from streams or rivers in the vicinity of native camps or villages. Such water, even if clear and inviting, should not be considered safe until boiled or treated with halazone. Water-borne diseases are major hazards of tropical and sub-tropical regions. In the vicinity of native populations, amoebic and bacillary dysenteries are the most common of these diseases. They are highly debilitating and can be fatal. Cholera, typhoid, blood flukes transmitting schistosomes and other diseases, worms and leeches can be picked up by drinking impure water.

25 - 26. Securing water will be a serious problem during the dry season even in the primary jungle and is always a problem in the thorn forests and other arid type jungles. In all jungles there are some kinds of water-yielding plants that will provide pure potable water often in unlimited quantities. The large jungle vines or lianas are the most widely available of such plants and offer the best drinking water. Any of the innumerable jungle vines that do not yield a bitter or colored sap will furnish water safe to drink. Avoid those that yield a red or milky fluid. The best vines yield a clear water with a slight acid or mineral flavor. In general, large diameter vines yield more water than small ones and since this water is being pulled up the vine to be

transpired through the leaves, more water is present during the heat of the day than at any other time. This water will be many degrees cooler than the air temperature.

27 -28. To tap a vine, sever it as high as you can reach, or cut a deep notch; then cut off the vine at knee level to give you a water tube six or seven feet long. Water will start flowing from the lower end. A single section of a large rough-barked vine will yield a pint to a quart of water.

29. The slender, smooth rattan vines are a particularly good source of water in some areas. To obtain a large quantity of water from them, several vines should be cut into 6 foot lengths and then held horizontally until a bundle has been obtained. All are then turned vertically at once and allowed to flow into a container. When the flow ceases, cut a foot off the top of the vines and more water will drain. Continue this process until no water flows. In securing water from any type of vine it is important to make the top cut first, otherwise the water will ascend and much or all of it will be lost.

30. Some species of bamboo contain water in the green stalks and it is usually good to drink through in some cases it is quite bitter. Old stalks that have dried and split often catch and hold rainwater between the nodes. Water trapped in this manner during the wet season is available during the dry season. Most of the climbing bamboos contain good water. To get a drink, cut a section for a container and then cut and drain the contents of each succeeding section (node and internode) into the container.

31. Bromeliads are pineapple-like plants whose up-curved leaves form natural cups that catch and hold rainwater. These air plants affix themselves to jungle trees or they may grow out of the ground. They are found in both wet and dry jungle areas. In the latter regions they catch the dew and the little rain that falls, holding it deep in the heavy leaf bases where it does not evaporate. In the primary jungle these air plants are filled with water that is frequently laden with decayed vegetable matter and small insects. It is pure, however, and can be sucked or siphoned off with a hollow reed so as to leave the sediment undisturbed.

32. The traveler's tree is an example of another type of jungle plant that catches and holds water. A cut near the base of the leaf will allow the water to flow freely into a container. Keep in mind that water from plants is pure, and except in wilderness areas it will save time and insure your health to utilize such sources. In some jungle areas plants may be the only readily available source of water.

33. Plant foods in the jungle are widely distributed and generally more available than animal foods. To make full use of the many edible plants, they must be specifically identified and should be learned and recognized before an emergency occurs. It is not practical to learn a great many plants; however, there are a few common jungle plants of the Pacific area that are almost always available and there are some general principles that will serve a man well in any type of jungle. Fruits and nuts that are being utilized as food by monkeys are usually safe for a man to eat and should be sampled in small quantities until their edibility is established.



34. Various species of palms are found throughout the tropics. They are, as a group, conspicuous, readily recognized, and many of them are excellent sources of food. A great many species yield edible fruits, inflorescences, terminal buds, sugary sap, or stored starch within the trunk. The kernels of the small coconut-like fruits of this Attabu palm are delicious when green.

35. The fruits of some of the old-world palms are not edible as they contain irritating crystals, but most of the new-world palms are edible or can at least be safely tested. In some types of palm nuts are the kernels which are eaten; in others the flesh. This palm was found to be good by trial and error sampling.

36. Fruits of the oil palm are tasty and nourishing.

37. The flower of this climbing pandanus is edible, the petals tasting somewhat like watermelon. Jungle fruits are frequently borne at the tops of high trees and can only be harvested on the ground. The most useful plants in the primary jungle are bamboo shoots, ferns and rattan palms and the fruits, nuts and leaves of various jungle trees.

38. Rattans are vine-like palms that look like climbing bamboos, these plants are common throughout the Pacific jungles. Their growing tips are edible just as is the coconut heart, and are obtained in the same manner. To obtain the edible portion, cut the vine and gradually pull it down through the jungle canopy. The thorny sheath about the stem of some species can be removed to facilitate pulling.

39. The 6 to 8 foot growing tip should be cut off and the spiny outer sheath removed.

40 - 41. This section of rattan can than be cut in short lengths and placed on a bed of coals to cook. When the outer covering is well charred, the tender inner heart will be cooked. Some species taste as good as "coconut heart" and others are slightly bitter, especially when cooked in the sheath. Most are edible raw, but more palatable and nourishing when cooked.

42. There are many species of bamboo, some of them climbing vines like the rattans. Their stems are hollow and divided into nodes. The new shoots of these bamboos or the buds often found along the stems can be cooked and eaten in the same manner described for the rattans.

43 - 44. Ferns of almost every description are found in the jungle. The young fronds of all of them can be boiled as greens. Some may be too bitter for your taste, but often a change of water will eliminate this. The better ones can be sorted out by trial and error. The starchy core of the tree ferns can be baked or roasted.

45. The heart or growing tip of many palms are edible. The heart of coconut palms such as you see here is known as "millionair salad" and is tasty and nourishing either cooked or raw.

46. - 47. The heart of palm is obtained by stripping off the leaf sheath until the tender growing point of the plant is reached.

48. Various species of figs are common in primary jungles and many of them are edible. The fruits are round and soft with a small characteristic hole at the top. Strangler figs curl themselves around other trees while to other types develop wide-spreading relatively thin buttresses that help support the tall trunk.

49. In cut-over jungle and abandoned garden areas, fruits such as bananas, papayas, mangos, custard apples, sour sops, jac fruit, limes, plantains, guavas, cashews and Antidesma will be found. The flower of the banana that you see here is also edible when cooked.

50. The custard apple is especially tasty and in many secondary jungles it grows in a wild state.

51. Yams are plentiful in both the secondary and primary jungles, but some of them such as the wild yam (*Dioscorea hispida*) are poisonous unless properly prepared. The natives do not use this species except in time of famine. It is abundant in the jungles and contains numerous tubers, some as large as a man's head.

52. Cactus fruits are a readily available source of food in the semi-desert thorn forests. Care must be taken to remove the hair-like spines from the yellow fruit before eating.

53. Here a red cactus fruit has been peeled. They serve as an excellent source of water as well as food.

54. The plant and animal foods found in jungle areas of the world are so great in number that we can treat them only in a very general way lest we lose sight of basic applicable knowledge in a mass of detail. Streams and rivers should be considered the best source for securing animal food as here aquatic animal life is concentrated into relatively small areas and the immediate terrestrial environment is always more heavily populated with birds and mammals than the surrounding country.

55. A survivor should, in general, plan to keep traveling until he strikes a stream, lake or estuary and then make camp until a supply of food can be obtained. Brackish water sometimes extends far back into the interior jungle and large salt water fish can be caught.

56. Wilderness streams are well supplied with fish and a survivor possessing a gill net should experience little trouble in securing enough fish to sustain him. Remember that fishing methods that work at home are very likely to be successful.

57. The hook and line is a good standby when baited with crushed snails, wood grubs, or insects. Trot lines for turtles, eels and other fish are always good. Under the right conditions you can catch fish with your hands, noose, snag, spear or gig them. In warm tropical streams fish are easily poisoned with derris, barringtonia and other fish poisons. Improvised nets and seines will yield results where minnows and small fish abound. You need have no concern about poisonous fish, a fish killed with fish poisons, but be sure to thoroughly cook all fresh water animal life before eating it.

58. Even if you have no fishing equipment, bark and fiber line can be made from plant materials and you can improvise toggle or gorge hooks such as you see here from bamboo or other hardwoods, or utilize rattan thorns as snell hooks. Fishing technics are too varied to discuss in detail, but a survivor's results will be in direct proportion to his previous fishing experience.

59. Many jungle plants such as Agave, Bromeliads, palms, rattans and so forth yield fibers that will make excellent fishing lines. This illustrates how you can strip fibers from the Agave leaves.

60. Although traps and snares are useful, no primitive method of catching or killing game, when used by inexperienced men, can compare with the modern rifle; therefore, take care of your .22 Horent and be sure you can use it effectively before an emergency arises. Wild pigs are common in many areas; their tracks and rootings being conspicuous in moist places. Pigs are difficult to stalk, but can be shot by waiting at a feeding area in early morning or late evening.

61. A man does not need to know how to recognize the many species of jungle birds and mammals as all of them are edible. A knowledge of the habits of specific species is a great advantage, but such knowledge is gained only by long experience and most survivors must make out without this advantage. As in the case of fishing, it is well to remember that a good hunter in temperate regions can do well in jungle country

by following basic principles and technics. This goral found in the tropical forests of the Himalayan foothills can be stalked and hunted just as related mountain goats are here at home.

62. A cardinal rule when hunting unfamiliar game is to proceed at all times so that you are not heard, seen, or scented. Look for animal signs such as tracks, faces, beds, runways, trails, and feeding marks, and do your hunting where such indicators of game are conspicuous and fresh. This Philippine negrite was a master at jungle hunting.

63. A few jungle foods are worthy of specific attention. Primates are conspicuous and numerous in some jungle areas, and can be shot with relative ease. Monkey meat is excellent, tasting somewhat like veal. The langur such as you see here is readily shot. Many jungle animals have highly developed senses of sound and smell. You will see more animal life by still hunting at a trail, water hole or feeding area than by hours of walking. Seldom will you be able to locate and stalk game, but you must wait for it to come to you. Select a spot downwind from the most likely approach and remain silent.

64. Jungle life is most active during early morning and late evening and generally quiet and inactive during the heat of the day. You must hunt when the animal life is active. Bird life can be shot or trapped. Here is one of the fruit pigeons common in the Palawan jungles. They generally feed at the tops of the high jungle trees --

65. but can be lured to snared in the jungle openings.

66. In regard to bird life, it is best to hunt in early morning and late evening and it is a waste of time and effort to hunt during showers or stormy days. Many species of birds are attracted to trees bearing fruit and the noise they make in feeding can be heard for a long distance in the jungle. Jungle edges and openings support larger populations of birds than the unbroken interior forest. The red jungle fowl is frequently abundant in the secondary jungle, but it is a wary, fast flying bird difficult to shoot.

67. Large fruit bats such as this are found in many of the Pacific Island and Asiatic jungles. They roost in great numbers in secluded jungle trees. They are easily shot on the roost and can frequently be clubbed. They taste like dove and are delicious boiled.

68. The large monitors, iguanas and lizards found throughout the tropics are all excellent eating. This large land iguana of the Galapagos Islands and related arboreal ones furnish enough meat for several meals.

69. Some species can be chased and captured, as you see here.

70. This mangrove-inhabiting monitor makes an excellent meal. They must be skinned and gutted. The long cylindrical tail muscle is best baked or roasted. Snakes are not to be overlooked, for they too are far better eating than their appearance would indicate.

essential, while protection from mosquitos, leeches, fire ants or other jungle insects may be of more concern than either a bed or a shelter. Fronds of the various species of palm trees and rattan vines can be easily split and shingled to form a waterproof roofing.

77. Examine a camp site before setting up camp and consider its desirability with regard to bedding and shelter material, firewood, available food and water, air movement, a level spot for sleeping, absence of insect pests, concealment and protection from storms, falling trees, floods and the like. If a natural shelter exists, use it. In heavy jungle, rain comes straight down and a roof such as this is all that is necessary to give protection.

78 - 79. A teepee or leanto made from parachute silk is an adequate shelter under many conditions. More practical for jungle camping is the para-hammock. When covered with a waterproof roof of palm fronds it makes an ideal bed and shelter.

80. Sleeping platforms should be constructed 1 to 3 feet off the ground and then blanketed with palm fronds or other vegetation. The types of beds and shelters that can be constructed from jungle vegetation are limited only by the ingenuity of the survivor. Remember that a good general rule is to make a bed off the ground, construct some type of roofing over it, and rig a mosquito net or use a head net. This jungle hammock meets most jungle requirements and should be a part of your emergency equipment. Many jungle areas get cold at night and you will



have to dry your clothing, or keep a small fire going to keep warm. Don't sleep on damp ground or in wet clothing, unless there is no alternative.

81. Cook jungle foods whenever possible. Cooking renders most foods more palatable and digestible and destroys bacteria and toxins. There are many ways that you can cook using materials at hand. A section of banana leaf such as you see here --

82. Can be folded and pinned with thorns to form a container --

83. That can be placed on hot coals and the water boiled.

84. - 85. Plant foods can also be cooked. The container will look like this when the food is done. It will not burn below the water line, but it may catch fire above unless moistened.

86. A green bamboo joint makes an excellent container. Food and water are placed in the node and the top sealed with a large leaf. The container is then placed directly on the fire.

87. The bamboo container will not burn completely until well after the food is cooked.

88. Broiling is a quick way to prepare fish or game. It can be placed directly on the coals, or as you see here placed on a green-wood grate over a bed of glowing coals -- not flames.

89. The importance of preserving meat and fish has been emphasized in other lectures, but it is especially useful in hot humid jungle country. Food can be dried by wind, air, sun or fire with or without smoke. A combination of these can be used. Fruits such as plantains, bananas, breadfruit, figs and berries can also be dried. Dried and smoked foods will keep for long periods of time in tropical climates.

90. The trick of making a fire in wet jungles is to secure enough dry wood or tinder to get it started. The wet exterior of dead limbs can be cut away to reach dry wood. Generally the inside of dead bamboo stalks is dry and the fine membranous-like skin adhering to the inner wall will ignite when most other tinders fail. Gather wood that is not on the ground. Wet wood will burn once you get a good fire going. The fibrous leaf sheaths and dried fruit stalks of palm trees, the dead leaves of pandanus, the fine fuzz covering on the growing tip of tree ferns, make good tinder. Some jungle trees such as this have bark containing a resinous oil similar to birch bark that will ignite almost instantly and burn fiercely. Keep dry tinder on hand at your camp and carry some with you when on the move.

91. Among emergency fire-making methods, the magnifying glass is the easiest and is effective on clear days. Have tinder and fuel on hand before starting this operation.

92. There are numerous wood friction methods of making fire that will serve a man well. To be effective they should be mastered before

an emergency. The fire plow consists of a beveled plow stick and a hearth stick about 2 feet long that is flattened to receive the plow. A slow steady motion will produce burning embers in less than 3 minutes.

93. Fire can be made by drawing a dry rattan thong back and forth under a soft dry piece of wood. The soft hearth stick is split at one end, wedged open and tinder inserted. It is held firm with the feet while the thong is pulled rapidly until smoke and hot embers appear.

94. The fire-saw commonly used in the jungle consists of two dry pieces of bamboo. The hearth stick is beveled to a knife edge and staked horizontally into the ground as shown here. The rub stick is notched to fit the bevel and tinder is placed in the cup of the bamboo. A steady rapid sawing motion produces hot embers that ignite the tinder. This is perhaps the most effective of all wood friction fire-making methods.

95. The hazards that a survivor may face in the jungle, are in general, greatly exaggerated. There are poisonous contact plants such as this poison wood, but none of them present as great a problem as do poison oak and poison ivy in the northern hemisphere.

96. The bite of the tarantula is poisonous but not fatal and a little care is all that is needed to avoid them.

97. Fear of jungle snakes is out of all proportion to the facts. Nowhere are poisonous snakes common or numerous over wide areas and most

of them are timid and seclusive. The danger of snake bite in tropical jungles is actually less than in rattlesnake and moccasin-infested areas of the United States. Your best course is to take normal precautions, give warning of your coming, and forget about fear of snakes. The fear is actually a greater hazard to a survivor than the snakes themselves.

98. Some tropical ants sting severely and attack in numbers. One species lives in these hollow thorns. When the bush is struck or shaken, they pour out to locate the disturbance. They inject formic acid which is painful but not serious.

99. There are biting termites that are perfectly harmless if left alone but will deliver painful bites when their paper-like nests are disturbed.

100. Native peoples vary a great deal in their attitude toward strangers. At times it may be best to avoid them but in most cases you can seek their aid with confidence. Many survivors of World War II owed their lives to friendly jungle natives. The help and friendship they extend to you will be directly proportional to your own goodwill and good conduct toward them. A friendly jungle man is an invaluable and therefore remember to:

- a. Approach natives with a smile and confident bearing.
- b. Never show fear and don't threaten or order them around.
- c. Treat them as equals, be eager to learn, and show enthusiasm.

and admiration for their skill and proficiency in guiding and supplying you with the necessities of life. With a little subtle praise and appreciation

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