GUAM'S CORAL REEF

Produced by the Division of
Aquatic and Wildlife Resources

*Supplement to
accompany Filmstrip
and cassette

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Dear Teacher:

This filmstrip and cassette tape on the Coral Reef was prepared by the Department of Agriculture's Division of Aquatic and Wildlife Resources for use by elementary teachers. It was funded by Guam Coastal Management Program, Bureau of Planning, Government of Guam.

Side 1 of the cassette is in English. Side 2 is in Chamorro for use in Chamorro language classes. Written scripts, a glossary of new terms and a bibliography is included.

We hope that this presentation on the Coral Reef will generate interest on the part of students in one of Guam's most valuable natural resources.

Judy Beaver
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Public Information Officer

Enclosures

GUAM'S CORAL REEF

(1) Focus Here

(2) Title: Guam's Coral Reef

(3) Guam doesn't end at the beach. The most amazing part of Guam begins here, where the waves slide up onto the shore.

(4) There is a strange and fascinating world here, just under the water's bright blue surface... The Coral Reef.

(5) Guam is surrounded by a living wall of coral. Put on your diving mask & swim fins. Let's go down and take a look around.

(6) The coral reef is an underwater jungle, rich with wildlife. There are over 700 different kinds of fish and thousands of other animals down here.

(7) All these animals, and a lot of underwater plants too, live together in harmony... just like people in a village... everyone has a job to to do... every animal and plant here, big or small, depends upon the other living things. Biologists call this an ecosystem.

(8) The coral reef is one of the most amazing ecosystems on earth. Reefs are only found in warm, tropical waters. Coral only grows in shallow water, like near islands, and only in clean, unpolluted water. The most magnificant reefs in the world are in the Pacific Ocean,

(9) especially around Guam and Micronesia.

(10) The most important member of this underwater community is, of course, the coral. The reef is actually made of coral and coral provides food and shelter for many of the animals that call the reef home.

(11) What is coral? We've all seen pieces of it washed up on the beach. It's hard and white, and looks like a rock. When we see it underwater it looks like a strange and wonderful garden of tall trees, odd bushes and delicate flowers.

(12) But coral is neither rock nor plant. All these fantastic colors and shapes and structures are animals.

(13) A single coral animal is a tiny, microscopic blob of jelly called a polyp. Each of these polyps, often about the size of a pinhead, builds a house of stone around itself. Since the little animal doesn't have any bones, this house serves as a skeleton.

(14) The coral polyp draws calcium carbonate from the ocean water. Calcium carbonate is the same thing as chalk, or marble or limestone; a very common building material. Using this watery cement, the polyps slowly build these amazing formations.

(15) So a piece of coral is not a single animal, but thousands of minature coral polyps living together in a community. When the older polyps die, they leave their little cuplike skeleton behind and new polyps build on top of them. This is how corals grow.

(16) Obviously corals grow very slowly. But over millions of years look what these little engineers can do. A small coral bud can grow into a huge tree. Bulky corals can expand to the size of a car. As these big pieces die and are covered over, mounds of coral become hills and hills become mountains.

(17) As the centuries go by, coral can form a wall around an island. And that's what we call the coral reef. Some whole islands are made of coral.

(18) Guam started out as a volcano that blew up from the deep ocean floor. But it wouldn't be nearly as large without the coral that grew for millions of years on the volcanic core.

(19) The whole northern end of Guam is a gigantic block of coral miles wide and hundreds of feet thick.

(20) Many islands are part volcano and part ancient coral growth. Coral reefs grow around the edge of islands, protecting the land from the pounding surf.

(21) If the reef is close to shore and shallow it is called a fringing reef. If it is far offshore and separated from the land by deep water, it is called a barrier reef.

(22) Guam has mostly fringing reefs, but the reefs around Apra Harbor and Cocos Lagoon are barrier reefs.

(23) During the day, most coral polyps hide in their holes. So a piece of coral looks like a rock with a lot of little pinholes.

(24) But at night the polyps come out and look for food. Now they look like millons of tiny flowers.

(25) Coral polyps are meat eaters. They use their hair-like tentacles to trap microscopic animals called zooplankton. Zooplankton are so small that a single glassful of seawater could contain millions of them. The polyp stings the zooplankton with stinging cells and then stuffs the food through its mouth opening into its stomach.

(26) Most corals have another way of getting nourishment. They have tiny, one-celled plants living inside them. These plants, called zooxanthelae, make food for both themselves and the coral.

(27) Zooxanthelae give corals their beautiful colors. These corals will die without their plants. Since plants need sunlight and there is no sunlight in deep water, coral reefs only grow in shallow water, usually less than 100 feet deep.

(28) Coral is the most important animal in the reef. Other animals live on the coral, or in little coral caves, or under coral boulders. Many kinds of reef animals eat coral, munching through the limestone to get the juicy polyps inside, others hide near coral and hunt for their dinner.

(29) Coral comes in a spectacular variety of shapes, sizes and colors. Some branch out in every direction like this staghorn coral.

(30) Some grow in colorful clumps.

(31) Other grow fat and round. The pattern on this coral's surface looks like a brain so it's called "brain coral."

(32) Not all corals are hard and sharp. Some are soft and flexible like rubber. These are called "soft corals" and there are many different kinds.

(33) Biologists estimate that there are at least 300 different species of coral just around Guam.

(34) Corals may be the most important animals in the reef but the most glamourous, certainly, are the fish. Many reef fish look like they were painted with bright colors just to please snorklers.

(35) This butterfly fish, for example is almost too beautiful to be real.

(36) And this angelfish is a masterpiece of nature's art. These rainbow colors are not just for decoration. They serve a purpose.

(37) Some fish, like this fairy basslet, use their fancy colors to help them hide; camouflage.

(38) Others hope their color patterns will frighten or confuse hungry predators.

(39) Biologists also think that flashy colors help fish recognize others of the same species, just like a football player's uniform makes him easy to identify by his teammates.

(40) Many fish use holes in the coral for hiding places. This is a gobi.

(41) Others, like this sharp-nosed puffer feed on tiny shrimp and other animals that live in the coral jungle.

(42) Some butterfly fish have long pointed mouths that allow them to poke around in holes and cracks as they search for food.

(43) The surgeon fish have dangerous-looking knife blades sticking out of their tail section but they are harmless and eat only plants like algae.

(44) The parrot fish is a coral-eater. Guam fishermen like to catch this popular fish. A reef fish not only has to find enough to eat, he has to keep from being eaten by predators.

(45) The puffer fish has an unusual way to defend himself. When a predator comes too close, the puffer swells up to several times his normal size.

(46) The cheerfully painted clownfish has found an even better means of protection. He snuggles down among the stinging tentacles of a sea anemone.

(47) The anemone, which is an animal, uses it tentacles to kill small fish but the clownfish is covered with a special slime that protects it from the stings of its partner.

(48) Unlike their technicolor cousins, some reef fish, like this lizardfish are the same color as the bottom. This camouflage helps them hide from predators.

(49) The coral polyps must taste really good because lots of reef fish eat them. The parrotfish has such strong teeth that he can crush the rock-hard coral.

(50) Here's a popular fish in the reef. The cleaner wrasse feeds by sweeping the bodies of bigger fish clean. Here you see a cleaner wrasse vacuuming the scales of a larger fish. .

(51) Of course many fish get their dinner by eating other fish. The hawkfish sits very still and waits for an unsuspecting fish to swim just close enough so that he can easily catch it.

(52) Just outside the safety of the reef, larger predators patrol the waters... always looking for food. These are barracuda.

(53) And, of course, there is that famous predator, the shark.

(54) There is a lot more to a reef than fish and coral. Some of the most important members of the reef community are plants.

(55) Algae, which is a plant, comes in many surprising forms. This coralline algae could be mistaken for coral. Coralline algae helps cement colonies of coral together and makes the reef stronger.

(56) Here, a common brown algae looks like underwater lettuce.

(57) Some grasses grow underwater, too. This is turtlegrass, a popular food of sea turtles. Sometimes sea grasses even have flowers.

(58) Sponges are animals that look like plants. They grow in one place and pump water through the many holes and channels in their bodies. As the water flows through them they strain tiny food particles from it.

(59) Some of your favorite reef animals are probably mollusks or "shells." There are hundreds of different kinds of shells. This is a cowrie. Cowries are common on the reef flat.

(60) Some mollusks, like the common cone shells, move around in search of food. They have a muscular foot that they use to crawl slowly along the bottom and some have a poisonous stinger, so leave cone shells alone!

(61) This mollusk, the giant clam, spends most of its life in one place, tightly wedged into the sea floor.

(62) Here's an interesting reef animal. The octopus can swim by jet propulsion and squirt black ink to hide itself. They turn bright red when scared. The octopus lives in holes and cracks and is an intelligent, gentle animal.

(63) Jellyfish can sometimes be seen patrolling the waters above the reef like spaceships. Their stinging tentacles capture tiny fish for food.

(64) Shrimps, crabs, lobsters and their relatives are called crustaceans. This is a small marine shrimp, a favorite food of fish and other larger animals.

(65) The sea urchin can really make a point! These underwater pin cushions have spines all over their bodies for protection. A skin diver who is not careful may be poked with sea urchin spines. Sea urchins can crawl slowly along their many little feet.

(66) Starfish are related to sea urchins. There are 20 different kinds of starfish around Guam. Some of them are quite beautiful.

(67) This crown-of-thorns starfish looks like a creature from outer space! The crown-of-thorns eats coral and moves slowly across a reef, munching coral and leaving a path of destruction behind it.

(68) This ancient member of the starfish family is called a crinoid. Crinoids usually hide in the coral by day and crawl out at night on tiny little feet to feed on zooplankton.

(69) Anyone who has been swimming in Tumon Bay has seen a sea cucumber. These fat, slow animals eat large amounts of sand. Their digestive systems take plant materials from the sand, leaving it much cleaner than before.

(70) This animal looks like a flower, but is actually a worm. The feather-duster worm lives in a tube that it builds itself. The worm sticks out a bunch of feather-like tentacles that it uses to catch food and to breathe. If danger approaches, the feather-duster worm retreats back into his tube.

(71) Here's another reef worm. The flatworm looks like a beautiful silk scarf rippling through the water as it swims. These worms feed on microscopic plants that grow on the bottom. They, in turn, are eaten by fish.

(72) The sharp teeth and evil-looking smile of the moray eel are enough to frighten anyone. The moray eel hides in caves; hunts and eats fish.

(73) Each time you visit the reef you'll discover a new animal. You'll see more if you go slow, look carefully and pay attention to detail.

(74) Occasionally you'll be the one that is discovered. Many reef animals are just as interested in you as you are in them!

(75) It's not necessary to go underwater to enjoy the reef. Hundreds of Guamanians play on the reef every day: swimming, fishing, boating, surfing or just wandering.

(76) The reef is one of Guam's most valuable natural treasures. It protects us from big waves and provides us with food, recreation and beauty.

(77) We have to be careful that the reef is not destroyed by pollution, erosion or by those thoughtless people who use poison and dynamite to kill fish.

(78) The coral reef is a natural resource for us all to use and enjoy. It's a living community of plants and animals, full of color, strange and wonderful animals, and surprises.

(79) Come back and visit the coral reef often!

(80) Credits:

(81) This filmstrip was produced by the Division of Aquatic and Wildlife Resources, Department of Agriculture, Government of Guam and funded by the Guam Coastal Zone Management Program, Bureau of Planning, Government of Guam.

GUAM'S CORAL REEF

1. Na kalro guini

2. Titulo: I Rubintason Guam

3. Ahi ti i inai-ha uttimona Guam. I mas na manman na patti Guam, esti tutuhonna anai i napo habhuchuda "gui halom gi tano".

4. Guaha guini ti fahongi yan bonita ena estero i mundo, guigi guini gi fondun a sut na mattingan...yuiga esti i nubintason propio.

5. Entero Guam na isla rinudendiayi nu i lalala na acho ni mafananaan "Coral" gi fino chamorro i naana "Chochu". Disdi pao para mona yangi i legko chocho kumeki illegko coral. Pues mega i atmasmo munanggu ya nihi ta bisita i fondun rubintason.

6. Kalan i gadun na halom tano esti i rubintason ani abundasia i man lalala na gaga yan chaguan. Guaha guini mas de 700 diffirentis klasi na guihan yan mit pot mito otro kalsen gaga siha.

7. Todo esti siha na gaga yan chaguan man lalala yan manisiha gi inakomprendi... pareho'a yan hifa ni taotao gi distrito..to de kada uno guaha ofisiona... todo gaga yan chaguan guini, dangkulo pat dikiki na minedong, ha dependendi gui gi pumalo ni man lalala gi oriyanan. Eyo na i Biologists ma fa naan esti na sistema i "ecosystem".

8. I rubintason depotsi uno gi estamas na manman na "ecosystem" gi entero i tano. Gi magahet ti to lugat gi tano na huaha esti i rubintason, esti na solo i "tropics" anai i hanom tasi tibio yan templao. I coral pat chochu eyo-ha lokue nai sina lala anai i hanom natata yan guaha isla gi hihot. I etmas bonita yan na manman na rubintason man gaigi guini gi pacifico na tasi.

9. Mucho mas guini giya Guam yan Micronesia enteramente.

10. I etmas impottanti na membro guini na komunida yi papa tasi esti i chechu. Entero i rubentason pururuha acho chechu, ya esti i chechu prumududusii nengkano yan i lihing para i umanada na gaga ni manasaga uini hi rubintason.

11. Hafa Chochu? Siempre guaha na un lii esti an mamomokat haogi inai. Apaka kulotna, mahetok gi pinachamo ya i posisionna kalan acho. Yangi unsoda gi halom hanom siempre un repara na bonita, na manman yan na malagu', kalan mohon gaigi hao gi un hatdin anai abundansia i man lokkana atbot, muntisiyu yan i man dilikao na flores siha.

12. Lao i chechu gi maghet ani ti acho ya ahi likue ti chaguan. I bonita na kulot yan fotmasion ni un lihi puru sinat ginen i megai yan dichiching na gaga ni man lilihing yan man lalala guini.

13. U gaga chochu dichiching dimasiao para talii nu i atadikta na maisa. Un pidasito ha na natas ya "polyn" i naanna gi fino englis Najas achamudung yan i putan nagua ya guiya fumatitinas chechu para gumana. Tai tulang, najas ya naturat na i gimana ha solo muna tatachu.

14. I natas gi chechu ha istitila i "calcium carbonate" gi tasi ya esti na matiriat ha uusa para ufatinas esti na futmasion. I "calcium carbonate" pareho yan i yesu pat i afug, mas gi kalan potbus na materiat, aproposito para simiento gi halo hanom.

15. Ahi lokue ti di kada uno na chechu uno na gaga. Gu uno-ha na chechu guaha mit pot mit na gaga, ...natas...pat polyn ...todos man lalala yan man dadana komo uno na kumunidad. Yangin matai i amko na natas mama queko k sagana ya gi ti abmam na tiempo guaha ot ro natas mama guma guine mismo na lugat. Gi taiguini na maniela na dumadangkulo, chechu.

16. Anuk an dispasio esti i chechu dumangkulu, lao gi miyonis pot miyones anos i despues atan ha na inasintado i produkto. I un pidasito na chochu sina dumangkulu kalan tronkun atbot na minedong ya i kala-u na trosu sina umachamudong han i dankululu na tumobit. Kada matai i duankulu na chechu humuyong mama bokka ya i bekka sigi-ha ma-ymenta minidongna estaki humuyong dankulu na oksu.

17. I despues de i siklus pot siklus na tiempo i chechu mas ha-umenta gui gi oriyan i isla ya gi taiguini na manera na mafananago i rubintason. Guaha na isla pago na tiempo ginen rubintason enteramente tati gi un tiempo.

18. I i islan Guam mafanngo ginen un butkan ni makta gi fondun i tasi anakuku na tiempo tati. Lao komo ti i umanada na chochu ni man mafanago yan manmatai gi rubintason ti u todo esti minidongna iya Guam na isla.

19. Entero i san lagu na banda Guam puru-ha chochu matiriatna, miyas pot miyas na fineda yan sien pie pot sien pie na pinetpot.

20. Megai na isla man pareho yan Guam, patti butkan yan patti chochu. Infin, i rubintason lalala gi kantu yan oriyan i isla komo protiksion kontra i napu gi tasi.

21. I rubintason ni natata yan hihot gi tano mafa-baab "Fringing reef" gi fino englisya eyo i tadung yan chagu gi tano mafa nanaan "Barrier reef".

22. Gi mayot patti todo rubientason Guam "Fringing reefs" lao i rubintson giya apla yan dano pareho i dos "Barrier reef".

23. Durantin i haane man hahalom i natas, pat polyps, gi ngiluniha para ufan atuk. Eyo na an haane na un atan, chechu kalan mohon un pidason achu ni puru-ha maduk.

24. Lao gi puengi man huhuyong i natas para u fan e buka ya i chechu kalan mohon rasimon miyones na flores dikiki.

25. I natas, pat polyps, man tekchu na gaga gi magahet. I meplu na kalulut praktiro gi mangoni gaga dichiching, pot mas matungo "soo-plankton". Para un comprende i dikikena esti i zooplankton masu na gi un basu na hanom tasi miyones pot miyonis na zooplankfon para un soda. Manngi na nengkano i zooplankton ya hunggan guinaiya mampos nu i natas chochu.

26. I mayoria gi chechu man manunuli sustancia gi otro manera. Guaha chaguan lalala gi san halomniha ya i naanna gi fino englis zoopanthelae. Esti na chaguan mamatitinas boka para guiya yan para i chechu gi mismo tiempo.

27. I zonpanthelae na chaguan munanai i chechu nu i sen bonito na kulotna siha ya sin esti na chaguan i chechu siempri u matai. Yaki hanisisita i chaguan somnak gi tadong na mattingan, pot esu lokue na i rubintason i natata-ha na hanom na sina lala. Natata kumeki i legna guine memus de sien pie na tinandong.

28. I chechu et mas impottanti na gaga gi rubintason, I pumalo gaga manasaga gi hilo i chechu pat gi man dikiki na liyang gi chechu osino i papa i man dangkulu na trosun chechu. Megai na gaya rubintason kumakanu i chechu, mangangangas i acho-afuk para u ha ke suda i mesgu na natas gi san halom. Guaha loke eyo i man aatuk gi fion i chechu ma mepiska para senanniha.

29. I chechu na gaga man gatbo gi megai na figura, minedong yan kulot. Guaha eyo i man ramas huyong gi todo diriksion tatkomo esti na kala-u "stahorn coral".

30. Guaha eyo i humuyong gatbo na rasimo yan se mahyao na tronku.

31. Guaha eyo lokue i yomuk yan ridondu. Repara i posisionna esti sa kalan taiguihe it titanus ya pot esti na rason na mafa naan "Braïn crol".

32. Ahi ti todo chochu mahetuk yan malaktus. Guaha eyo i manana yan naba kalan goma. I naanna esti "soft coral", ya la megai difirentis klasi guaha nu esti.

33. I man biologists ma estitima na guaha ti sina menus de 300 difirentis rasan chochu guini-ha giya Guam solo.

34. I chechu buente mas impottanti na gaga gi rubintason lao i etmas gatbo, siguro na i guihan siha. Megai gi guihan rubintason man malak kulotniha ya kalan mohon man mahasngun-ha man ma penta pra uma ribirensia hit, hita ni man lili-uf gi mattingan.

35. Esti i ababang, pot i hemplo, mampos bonitana esta ti fahunggi na lalala magahet.

36. Ya esti i anghitan, gi finena inatanmo siempri un disidi na taya mas asintado na finanagu ki guiya. I koluntna kulot isa ahi ti para adotnu-ha solo, sa gi magahet guaha na sumesitbi.

37. Guaha loki eyo siha na guihan, tatkomo esti i chalak palaoan, i umuusa i spot na kulotniha para uha atkgui hafa na pilgro; nota maulek na hana "chichilung, kulotna yan i oriyana siha.

38. Guaha talo eyo i umuusa kulotniha para uma ispanta yan inkubuka i man tekchu.

39. Man hahalum i biologists na ginen i kulot i guihan na ha distitinggi haye acha parehuna gi entri i batkada, pareho yan i bulero lokue ni ginen i minision na ha tutungo haye man gachongna gi plasa.

40. Megai na guihan muna sesitbi i ngilu siha gi chechu komo fan atukan. Doddu esti i un aatan pago.

41. I pumalu gihan, tatkomo esti i butentin sukrus, diario talilii manochuchu uhang dikiki yan otro gaga siha ni man lalala yan manasaga gi halom tano chochu.

42. Guaha eyo na abagang, i anaku uan akadiduk pikuna para u sina man buska negkanona gi ngilu yan i kaka siha.

43. I tataga na guihan gai atmas ni piligru na chachachak gi tronkun dadalakna. Lao gi magahet ahi ti malamana it tataga na gaga ya fuera de enao taya nanana na chaiguan-ha yan lumut.

44. Pago esti i lagua, estagui kakanu chochu prifekto. Ma gof guaiya makoni i lagua nu i man pesdadot Guam. Magahet na i guihan rubintason ti eyo-ha atburutuna i u fan aligao para u kanu lao gi mismo tiempo nisisario u adahi gui n u makanu lokui nu i man tekchu.

45. I buteti taya atmasna lao guaha difinsotna naturat. Yangin guaha tekchu humihut guato giya gûiya insigidas i buteti ha na fan bula tataotaona ya hana dangkulu gui megai buettas mas ki i minidongna depotsi.

46. Esti na guihan fomu kakaroti naanna. Para u difendi gui yan para u eskapayi i man tekchu na gaga humahalom ya umaatuk guini gi goliman madera.

47. Esti i guliman madera kalan chaguan lao gi magahet gaga na lalala ya piligru para i man dichiching na guihan. I kalulotna binenu para guihan lao i fomu kakaroti guaha dangesna ya ti guinaiya nu i guliman madera.

48. Lao ahi ti todu guihan rubentason man malak yan kalak kulotniha. Chuli esti i pippipu pot i hemplo. Nota na i kulotna ni mas ni menus yan i fondun i msyyinhsn. Bintaha esti para i pippipu sa mapot linii nu i tekchu.

49. Siguro manngi i natas chochu, ombri megai gi guihan rubintason gumuaiya kumano. I lagua ni un lilii guini ha nganga ligas i mahetuk na chochu. I nifenna metgot yan makaktus.

50. Estagui un guihan ni todos tumungo gi rubintason. Guiya esti i lestun mattingan. Chumochuchu i leston mattingan gi aplacha i man dangkulu na guihan. Guini na litratu un lilii i lestun chumochuchu yan hana gagasgas i dangkulu na kakaka.

51. Naurat na megai na guihan manochuchu gi otro guihan. Esti na gadao pulan umeenangga otro guihan para u lahihut ya u tuchu.

52. Gi hiyong i rubintason anai mas latadung i mattingan, man gaigi i man lamudong na tekchu na man eekanu. Un aatan guini pago un batkadan alu.

53. O, ya chamu malelefa nu i haluu lokue.

54. Gi rubintason guaha mas para un lii fuera de guihan yan chochu. I otro sen impottanti na membro yuini na komunida, i megai difirentis kalsi na chaguan tasi.

55. Guiya esti i lumut mattingan. Megai difirentis klasin lumut guaha gi rubintason. Guaha na baihi na kalan chochu posisionnna. Ayudo na dangulu esti sa chechetun gi achu yan hasus tietieni i chechu ya mas ha na fifitmi rubintason.

56. Pago esti i otro klasi na lumut kalan mohon tipoyo, lao gi magahet guiya esti i chaiguan rubintason.

57. Hungan guaha sakati gi halom tasi lokui. Mafa naan esti sakatin hagan pot rason na gof guinaiya kimanu nu i hagan. Guaha na biahi na man man flores esti lokui i chaguan tasi siha.

58. Estagui un gaga na kalan chaguan posisionna. Kotchan manana naanna ya ti hahanao gi sagana. Ha kukula i hanon tasi gi megai na tubo yan ngulu gi taotaona, ya eyo nanana i man dichiching na pidasu ni man chinichili nu i hanom.

59. Possibbli buenti na i etmas yamu na gaga gi rubintason, esti i karakot. Umanada na rasan karakot guaha gi tasi. Esti i un aatan pago bungi i naanna ya makokoni esti gi fina lamasa gi rubintason.

60. Guaha eyo na lkasin karakot i gai patas ya kumukunanaf para u fan ispiha nana, tatkomo esti i apegaga. Lao guaha na apegaga didiluk ya binenu dinilokna. Pues mas maulek yangin un suhayi to apegaga gi tasi.

61. I otro gaga ini hasan na humanao ya pinat un lugat-ha na sumasaga, esti i hima. I hima chechetun fitmi gi fondun i rubintason.

62. Uno gi etmas malati yan karinosu na gaga rubintason esti i gamsun. I gamsun na gaga mato gi chadik na nangu yan an nisisario na u atuk ha flichis-ha amesna ya malingun hanum-ha gi meman atadokmo.

63. Sesu esti i papagu di malii pumasesehu tenga gi sepin i tasi gi rubintason. I kalulotna binenu para guihan dichiching ya gi taiguenao na hasosoda i para u kanu.

64. Abundansia lokui gi rubintason esti siha i panglao, umang, mahongan yan palu gaga ni karakot lasasniha. Estagui un dikiki na umang tasi mi alabuenaquenta todo gaga gi tasi gumuai ya kumanu.

65. Un aatan pago guini i laum, uno na gaga gi tasi ni suficienti protiksion. Gi todo i tataotaona i laum guaha didiluk ya komo ti un adahi libiano ha tinekcha. Dispasio kumalamtin lao hunggan sina humanao esti i laum.

66. Pumarentis rasanniha i laum yan esti i kiluus tasi. Guaha kasi 20 na klasin kiluus tasi guini giya Guam ya guaha entri siha bonito para ma atan.

67. I otro klasi na kiluus tasi esti i kurenan laktus. Kalan bibinsi i posision yan i kulot lao i kuronan laktus inimigu para i rubintason. Esti na gaga humahanao ya todo chochu ni ha sosoda mona ha kakanu. Todo i ha falofangui ha distrotrosa konfuetsa.

68. Kontodo esti lokui kiluus tasi na familia ya i naanna crinoid. I crinoid mas ancianu na membro gi familian kiluus tasi. Gi haane umaatuk gi halom chochu ya i puengi na humuhuyong para u chochu.

69. Maseha hayi ni chumagi mato gi tasin tommum, siempre halii esti i balati. Yoyomuk esti na gaga ginen i kantidan unai hi ha kakanu.

70. Gi primet inatanmo nu esti siempri i legmo na flores. Ahi, ulu tasi i un lilii guini gi magahet. Sumasaga esti na ulu gi un fina tubu ya i kalulotna ni kalan pulun manuk eyo na humahagung. Komo manenti hafa na piligro insigidas i kalulotna hiha man halom tati gi tubu.

71. Yangin unlii esti gi halom hanom ni na haso hao un pidasun talapus chita. Atan talo sa siempri un ripara na ulu tasi esti lokue. Munanangu para i fondu ya chumochuchu chaguan. Guaha guihan gumuaiya kumanu esti na ulu.

72. Hasan taotao ti maanao nu esti i hagmang buchi. Nota i malagtus nifenna yan i malamana na hichurana. Sumasaga gi liyang rubintason ya i guihan mas yana na nana.

73. Di kada biahi na un bisita i rubintason un diskukubri nuebo na gaga ni ti un lii gi mapos na finatomo. Mas para un liii yangin munangu hao dispasio. Atiendi maulek i hinanaomo yan na gef mata hao gi todo i oriyamo.

74. Megai gi gaga rubintason man intirisao nu hago lokue, taimano-ha i intiresmo nu siha.

75. Ti nisisario na un liuf gi fondu para un gosa i rubintason. Megai na chamorro dumibiebietti siha gi tasi kada dia; an ti man nanangu pues mamepiska osino man bobuti pat man ee fotgun-ha sin nisisidad.

76. I rubintason uno gi mas prisioso na mina para Guam. Ha protetehi hit kontra i napu, ha nana-i hit nengkanu minagof yan gatbesa.

77. Nisisario na taadahi yan ta protehi i rubintason. Munga hit dumistrosa; nihi ta na para kumuchinuyi yan umplcha-i tasita. Basta i peskan dinamita yan i peskan binenu.

78. I tasi yan i rubintason irinsiata todos para ta usa yan ta gosa gi gasgas yan dinanchi na manera. Lalala na komunida i tasi anai manasaga i man bonito yan manngi no chaguan yan gaga siha.

79. Tatalo mogi ya un bisita i rubintason mas sesu.

80. Credito: I prumudusi esti: Chris Wille
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81. Esti na produksion ginen Division of Aquatic & Wildlife Resources, DOA, GovGuam ya inapasi nu i Guam Coastal Zone Management Program, Bureau of Planning, GovGuam.

GLOSSARY

Algae	-	plants without roots that make their own food from sunlight and minerals taken right from the water. Large kinds of algae are called seaweeds.
Anemone	-	flower-like animals related to corals that have no calcium carbonate skeletons. Anemones catch food with stinging cells in their tentacles.
Barrier reef	-	a reef which occurs far from the shore and is separated from the land by deep water. Reefs around Cocos Island and Apra Harbor are barrier reefs.
Calcium carbonate	-	a mineral that corals and coralline algae draw from the water that makes their outer tissues turn hard. It is the same mineral that is found in chalk or limestone.
Camouflage	-	a disguise that helps an animal blend into its surroundings by using color, shape, or pattern. It makes an animal hard to see by its predators or prey.
Coralline algae	-	tiny plants that live in the ocean and store calcium carbonate in their cells. They feel hard to the touch and help cement coral colonies together to make the reef stronger.
Crinoid	-	an ancient relative of the starfish that gets its food by capturing plankton in a slime found on its many arms. Crinoids usually perch on sea fans and other corals while feeding.
Crustaceans	-	animals found mainly near or in water that have hard outer skeletons with jointed legs on their upper and lower bodies. Crabs, lobsters, shrimp, and hermit crabs are some of the many kinds of crustaceans.
Ecosystem	-	all the plants and animals in a community and the physical environment they live in.
Erosion	-	washing away or removal of soil by wind or rainfall.
Fringing reefs	-	a shallow coral reef that has grown around the edge of an island or continent.
Hard coral	-	colonies of tiny polyps that can build large coral reefs with their hard calcium carbonate skeletons. Each polyp has tentacles numbering six or multiples of six.

Jet propulsion	-	to propel outward under pressure or force.
Microscopic	-	an object so small it cannot be seen with eyes alone.
Mollusk	-	soft-bodied animals that live near or in the water that are usually covered by a hard shell. Animals that live seashells are one kind of mollusk.
Natural resources	-	available supply of materials that occur in nature.
Pollution	-	contamination of an environment, especially with man-made waste.
Polyp	-	a hollow-bodied animal that is attached to a base. It has only one body opening which is surrounded by tentacles. Some body tissue may connect with a neighboring polyp.
Predator	-	an animal that gets its food by eating other animals.
Prey	-	an animal that is eaten by other animals.
Sea grass	-	a true grass that grows in the ocean and gets its food through roots growing down into the sand.
Soft coral	-	colonies of tiny polyps which only have spine-like pieces of calcium carbonate in their tissues. With these pieces, soft corals have some support for their bendable colonies. Soft corals always have eight tentacles.
Sponge	-	Attached marine animals; the soft skeleton of some are used for bathing and cleaning.
Stinging cells (nematocysts)	-	special cells found in the body walls of polyps and jellyfish which shoot out a coiled tube to sting and capture prey.
Tentacles	-	long arm-like body parts found around the mouths of many soft-bodied animals.
Volcano	-	vent in the earth's crust through which molten lava and gases are forced out.
Zooplankton	-	many kinds of tiny animals that spend their lives floating in the ocean. Most are so clear you can practically see through them.
Zooxanthelae	-	one-celled plants that live in the tissues of corals and some mollusks and manufacture food for the corals and themselves. Zooxanthelae give corals their beautiful colors.

Bibliography

Burgess, Robert F. Exploring a Coral Reef.

Darling, Lois Coral Reefs.

May, Julian These Islands Are Alive.

McGovern, Ann The Underwater World of the Coral Reef.

Richard Randall and L.G. Eldridge Life On Guam Coral Reef.

Richard Randall and L.G. Eldridge On the Reef.

Ronai, Lili Corals.

Silverberg, Robert The World of Coral.

Zim, Herbert S. Corals.

All references available at Nieves Flores Library.

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