

Let's Talk Fish and Wildlife

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Dear Student and Teacher:

Hafa Adai! The Department of Agriculture is proud to present you with this coloring book as part of the Division of Aquatic and Wildlife Resources' Public Awareness and Conservation Education (PACE) program.

This activity puts the student's coloring skills to work while providing information about animals which are native or common to our island. "*Lets Talk Fish and Wildlife*" features land animals and some of our island's more common reef fish. It includes species familiar to children or totally unknown to them because the animals have become extinct or rare. Endangered and extinct species are featured to give the children of today a glimpse of the rich and diverse wildlife population which existed on Guam prior to the arrival of the predatory brown tree snake.

It is our hope that through this activity book and other resource materials produced through the years by the PACE program, the children of Guam will develop an appreciation for their natural heritage and also realize the importance of conserving Guam's fish and wildlife resources, not only for their generation but for future generations as well.

Happy Coloring!



SESYON/HITENG (rabbitfish)

The rabbitfish is an important and highly-prized food fish. Its spines along the back and underside are venomous and can cause an extremely painful sting.

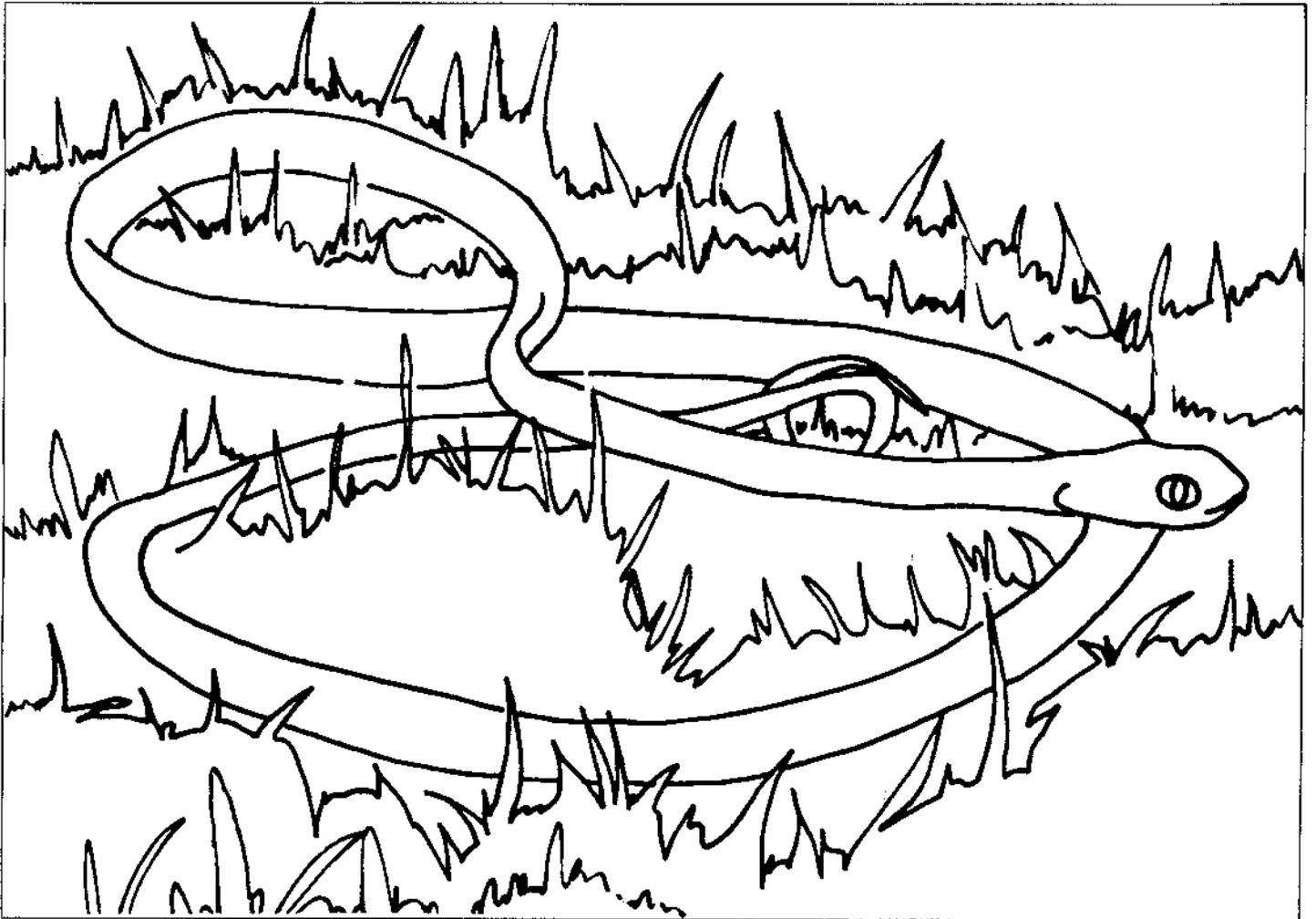
There are five kinds of rabbitfish on Guam. The two most abundant kinds, hiteng (*Siganus argenteus*) and sesyon (*Siganus spinus*), arrive from the open sea as tiny silvery, transparent fish, locally called "manâhak." This usually occurs around the last quarter moon in April and/or May and occasionally in October.

A long-standing cultural tradition with Chamorros, the manâhak harvesting season is always eagerly awaited by talayeros or cast net fishermen. During a good seasonal run, millions of manâhak invade the reefs where, for only a few days, talayeros are able to scoop them up in fine-mesh nets. After that, the manâhak begin to feed on algae and start to gain their reef color pattern. At this stage, they are known as dâgge' and for several months, are not considered very good to eat because of their bitter taste. When they reach adult size, they are called hiteng and sesyon and again can be caught seasonally when they group in reef areas to spawn, usually in March and April.

The increase in jet ski activity has created problems between jet ski operators and talayeros who line the shores of Guam waiting to harvest the schools of manâhak. When manâhak start to run, talayeros say the motor activity forces the small schools of manâhak to break up into even smaller groups, making capture difficult and even threatening some traditional manâhak fishing areas. The conflict has resulted in a user plan which now restricts jet ski use in certain areas during manâhak runs.

Hiteng can occur in large schools that roam the reef feeding on algae they have scraped from the bottom. They tend to live in deeper lagoon areas or the outer slope beyond the reef edge. Sesyon are usually found in smaller groups, although they sometimes occur in large schools. They live primarily on reef flats and in shallow lagoons. Hiteng can grow as large as 14 inches (36 cm) while sesyon reach a size of about 11 inches (28 cm).

Sesyon or hiteng can be caught by using nets, spears, and hook and line. A green stringy algae, known in Chamorro as chaiguan, is used as bait to capture them.



KULEPBLA (brown tree snake) *Boiga irregularis*

Introduced Species

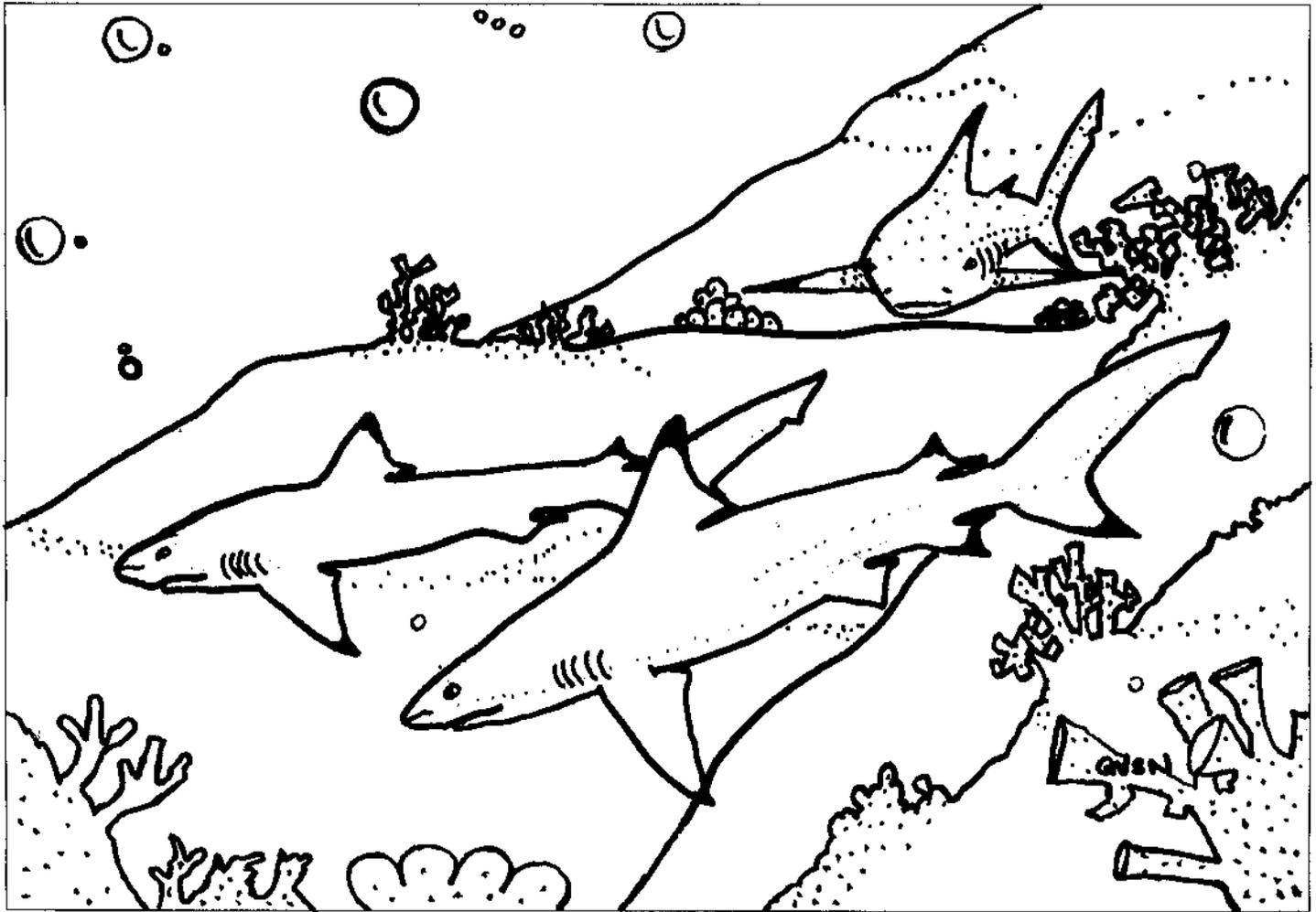
The kulepbla, as the brown tree snake is called in Chamorro, is an introduced species which probably arrived on Guam hidden in ship cargo. It is often mistakenly called the Philippine rat snake, but scientists have determined this reptile is the brown tree snake and does not even exist in the Philippines. It is native to Papua New Guinea, the Solomon Islands and Northern Australia.

The kulepbla deposits up to 12 leathery-shelled eggs in caves, hollow trees, or other places where they are protected from drying and overheating. The eggs hatch after an incubation period of about 90 days. The young kulepbla are about 15 inches (38 cm) long when they hatch, but may reach lengths of three feet (90 cm) in about a year. They are about four to five feet (1.2 to 1.5 m) long when they first reproduce and can grow to as long as 10 feet (3 m). The kulepbla is one of only two snakes found on Guam. The other is the ulo' attelong or blind snake. The kulepbla lives mainly in trees and is nocturnal, which means it is most active at night. It is sometimes found in or around homes, commercial buildings and other urban areas in search of food and hiding spots.

These snakes feed on birds, eggs, lizards, rats, mice and other small mammals. They are the cause of the decline of Guam's native forest bird population. They also prey on baby fanihi (Mariana fruit bats), thus contributing to the overall decline of the bat population. Like most reptiles, the kulepbla can go for long periods without food.

The kulepbla is poisonous. Several babies on Guam have nearly died after being bitten by it. This is why parents are advised to keep kulepbla away from infants and small children. They are also constrictors, which means they kill their prey by wrapping themselves around their prey and then squeezing. They also kill their prey by holding on to it and chewing, thus allowing the poison to slowly leak into the victim. The kulepbla will strike and bite if cornered, but people generally have little reason to fear them.

This animal is not native to Guam, therefore, it has no legitimate place on our island. The Department of Agriculture's Division of Aquatic and Wildlife Resources encourages the public to destroy all kulepbla or take them live and turn them in to the DAWR for scientific study. Research is ongoing to develop a method to control or eradicate the kulepbla on Guam.



HALU'U (gray reef shark) *Carcharhinus amblyrhynchos*

Sharks or halu'u (a general term used by Chamorros for all sharks), differ from other fishes in many ways. Their skin is covered with tiny dermal denticles similar to teeth. This gives the skin a rough, sandpaper-like texture. The teeth continuously form in rows on the inner surface of the jaws. When an outer tooth is lost, the next available inner tooth takes its place.

The fins of the halu'u have the same skin and texture as the rest of the body and are rigid at their bases so they cannot be folded as in most other fishes. Using a system of pores around its head and sides, and a pair of inner ears, the halu'u can feel vibrations and sounds made by fish and other animals that are far away. At close distance, the halu'u, with its sharp sense of smell, can find the smallest concentration of blood or other body fluids from potential prey. Sight is limited by the clarity of the water. At close range, halu'u have an amazing ability to sense the tiny electrical fields given off by all living creatures. This allows them to find their prey in complete darkness or hidden beneath the sand. Some halu'u use magnetic fields which allow them to determine in which direction they are swimming.

There are more than 12 species of halu'u in Guam's waters. Most are harmless unless stimulated or provoked. Besides the gray reef shark, the reef whitetip shark (*Triaenodon obesus*) and the reef blacktip shark (*Carcharhinus melanopterus*) are the most common sharks on shallow reefs. They are small, reaching a length of about six feet (1.8 m). The gray reef shark can be quite aggressive and territorial, and has been known to cause severe, although, non-fatal bites. The other two species generally flee when approached.

The tiger shark (*Galeocerdo cuvieri*) is our most dangerous species. It grows to about 18 feet (5.5 m), will eat almost anything, and has been known to attack and eat divers. Fortunately, it spends most of its daylight hours in water more than 200 feet (60 m) deep where encounters with humans are unlikely, but it occasionally enters shallow water at night or anytime when attracted by dead animals or garbage, or when breeding.

Halu'u are at the top of the coral reef food chain and play an important role in the balance of nature. They should not be killed indiscriminately unless for safety or some good use. Halu'u do not produce many young and grow rather slowly. It is easy to overfish halu'u and, although people fear them, they are an important part of a healthy ecosystem. They eat diseased or sick animals as well as dead or dying animals.



KO'KO' (Guam rail) *Rallus owstoni*

Endangered Species

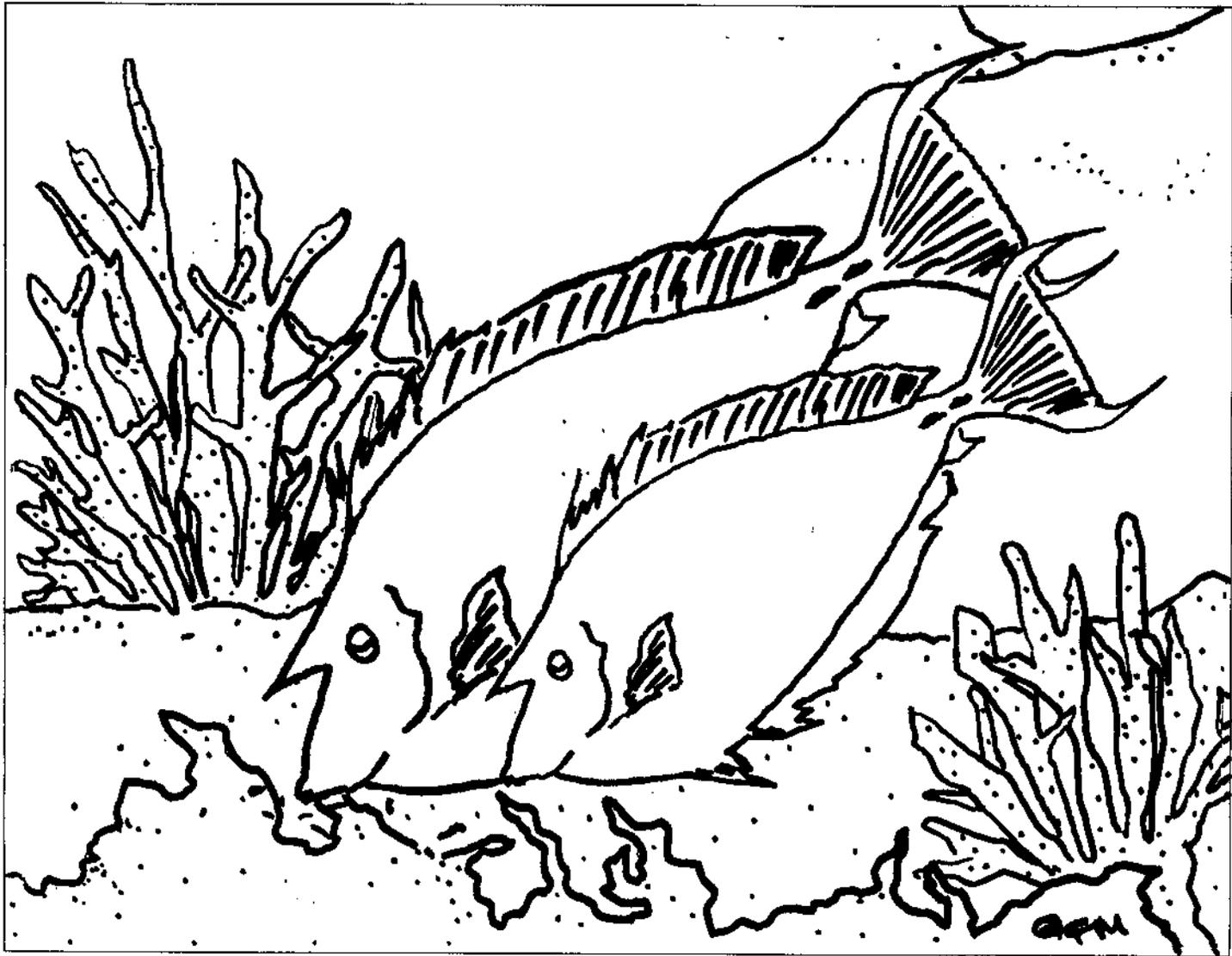
Endemic Species

The ko'ko', as the Guam rail is known in Chamorro, is a very special bird. It is endemic to Guam; that means it is found nowhere else in the world but on Guam. This bird is dark brown with white stripes on its stomach. A Chamorro legend tells how the ko'ko' got its stripes. One day, a hilitai (monitor lizard) and a ko'ko' decided they looked too plain, so they agreed to paint one another. The ko'ko' painted the hilitai. When it came time for the hilitai to paint the ko'ko', the hilitai painted a few strokes then decided he was tired and left all but the ko'ko's stomach unpainted. The ko'ko' became so angry that he bit the hilitai's tongue in two. This is why, according to the legend, hilitai have forked tongues and cannot make noise.

The ko'ko' came to our island thousands of years ago. At that time it was able to fly, but as there were no predators on Guam, it slowly lost the ability to fly. People arrived on the island and brought dogs, cats, rats and monitor lizards with them. Sometime after World War II, the predatory brown tree snake also found its way to our island. Since the ko'ko' is flightless and builds shallow nests on the ground, it was easy for snakes to catch the ko'ko' and its babies.

Ko'ko' lay up to four large, freckled eggs. Young ko'ko' leave the nest when they are only one day old. Their parents then eat the egg shell. Adult ko'ko' eat insects, snails, skinks and geckos. They like to live in brushy areas mixed with grassland or forest. They also like to bathe in the rain. When their numbers were high, they often could be found along the roadside in tall grass early in the morning. Due to snake predation, the ko'ko' population has become extinct in the wild. Now, it is against local and federal laws to capture, harass or kill a ko'ko'.

The Department of Agriculture's Division of Aquatic and Wildlife Resources and several zoos in the mainland U. S. came together in 1983 and began a captive breeding program for the ko'ko' in hopes that they could prevent this bird from becoming extinct. Since that time, more than 300 ko'ko' have been born in mainland U. S. zoos and on Guam. Many of these have been released on Rota where there are no snakes. Maybe one day, when the snake population is under control, some ko'ko' can be returned to their original home on Guam.



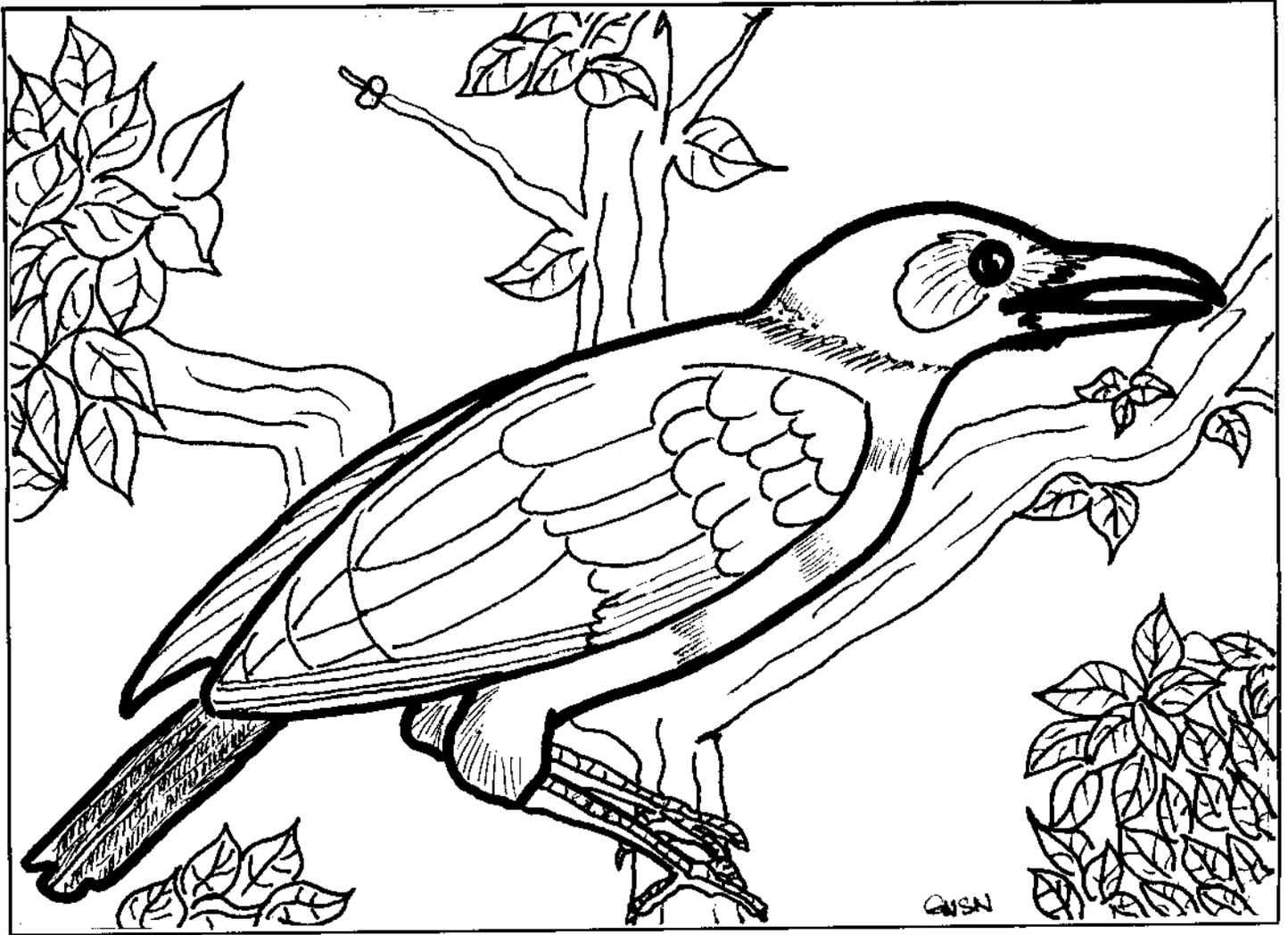
TATAGA' (bluespine unicornfish) *Naso unicornis*

A popular food fish, the tataga', as the bluespine unicornfish is called in Chamorro, is one of a group of unicornfish which develops a prominent horn on the forehead. Most unicornfish have two pairs of sharp blade-like spines at the base of the tail. These are used for defense and can easily cut the hand of a careless fisherman. The blue color around the base of the spines serves as a warning signal to would-be predators that this fish may be dangerous to capture and eat.

Tataga' are the most common unicornfish of shallow reef slopes where they sometimes occur in groups. They are most abundant in surgy outer reef areas, but also are found along lagoon and channel slopes to a depth of about 100 feet (30 m). They feed on attached and floating seaweed and are especially fond of leafy brown Sargassum seaweed, called chaiguan in Chamorro. A skilled fisherman can hook them in channels by using chaiguan as bait. They are also caught along the reef margin by using spear and cast net. Tataga' may reach a length of 22 inches (46 cm), excluding the tail filaments.

Young tataga', called guassa' in Chamorro, do not have a horn and settle from the reef as nearly-transparent larvae after having lived in the surface waters of the open sea for as long as two months. Unicornfish larvae get unusually large, up to two inches (5 cm), before they settle on the reef. That is why it is almost impossible to find smaller young on the reef. Large tataga' larvae have distinctive dark spots on the back and are a common prey of m̄him̄ahi, w̄hoo, tunas, and young billfishes.

Three other horned unicornfish also occur in Guam's waters. The common spotted unicornfish (*N. brevirostris*) has dark spots with vertical streaks on its body and a whitish tail. The less common white-margin unicornfish (*N. annulatus*) has a thin white border around its tail; in its younger stages, it also has a white band around the small of the tail. The rare humpback unicornfish (*N. brachycentron*) has a bizarre-looking hump on its back, but only the males develop horns.



ÂGA (Mariana crow) *Corvus kubaryi*

Endangered Species

Endemic to Guam and Rota

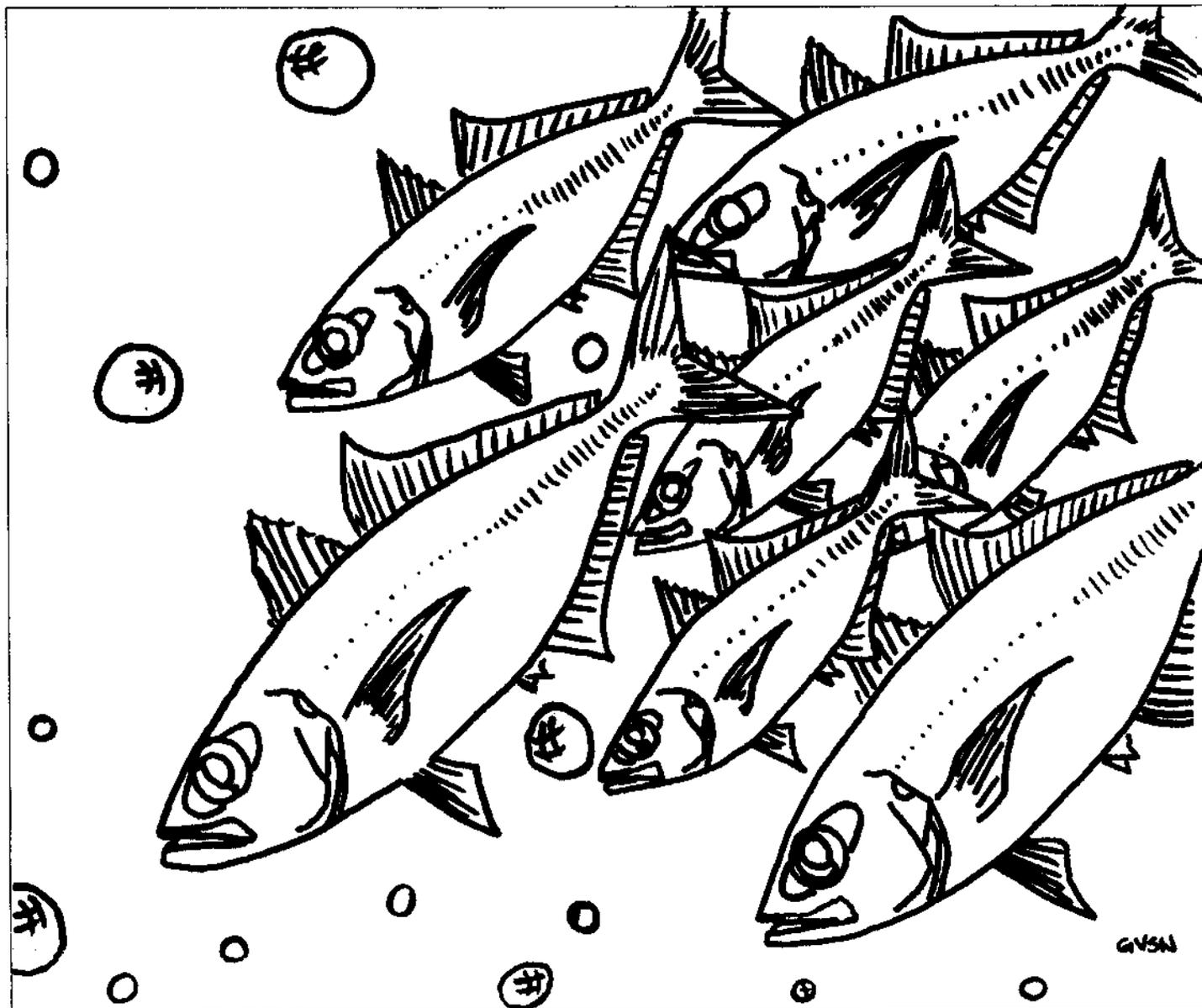
The âga, or Mariana crow, is endemic to Guam and Rota, which means it is found nowhere else but on Guam and Rota. Once occurring throughout most of Guam, only about 20 now survive in forests at the northern end of the island, with another 300 to 400 crows on Rota. It is listed on the federal and local endangered species lists.

At one time, farmers shot the âga because it raided corn fields and ate baby chickens. Now, there are too few of them to do any damage to farms. Snake predation is responsible for the decline of this species.

Âga sometimes fly in groups for long distances. Some Chamorros believe that if you hear its call, someone is about to become ill. These birds closely guard their territories and will chase and scold you or other birds with a loud "râh" squawk. Âga are social birds and groom each other by pecking insects off each other. They are omnivorous, which means they eat both plants and animals, including insects, lizards, flowers and berries. They use their beaks to hammer small chunks of bark from trees to expose and eat the insects.

Âga often nest in the tops of *Elaeocarpus* or "yogga" trees, where they build heavy nests. Both parents build the nest and sit on the eggs. Young âga follow their parents, watching them closely and copying what they do. When they are hungry, they squawk and beg to be fed.

Since 1992, the Department of Agriculture's Division of Aquatic and Wildlife Resources (DAWR) has been experimenting with different techniques to allow the âga to nest successfully. One method involved the retrieval of an egg from an active nest and replacing it with a "dummy" egg to keep the adult âga incubating until the real chick could be returned to the nest. Biologists were able to successfully hatch the egg in captivity, but other problems developed. When the chick was returned to the nest, it died nine days later when it fell from the nest. Biologists believe the nest was disturbed during the night, forcing the parent birds to fly off, leaving the chick unattended. In 1996, the DAWR successfully hatched two chicks in captivity both of which will be released back into the wild.



ATULAI (bigeye scad) *Selar crumenophthalmus*

The bigeye scad or atulai, as it is called in Chamorro, is an important food fish found in all tropical seas. It is in the same family as the jacks. The combination of large eyes and compressed body help distinguish it from other mackerel-like scads. The scutes (a lateral row of bony-ridged scales forming a keel at the base of the tail) distinguish it from similar-looking small mackerels of the tuna family.

Atulai spend most of their time in deep, near shore waters beyond the edge of the reef. During certain times of the year, they migrate to shallow bays and channels where they form large schools or groups. When inshore, they feed on small benthic (bottom-dwelling) invertebrates, foraminifera (tiny, pinhead shells found in deep water), and shrimp. Offshore, they feed on zooplankton and fish larvae (eggs).

Atulai can reach a size of 15 inches (38 cm), but rarely are more than 10 inches (25 cm) in Guam's waters. During the day, atulai can be harvested by nets and hook and line. The same methods can be used at night when fishing in or close to a lighted area.

During atulai season, it is not unusual to see a large crowd of anglers fishing for atulai in or around the Agana Boat Basin area. Chamorros call this "tiempon atulai" or atulai harvest time. Sometimes, a large net is set across an entire bay to trap the atulai. A large group of people help close the net and harvest the fish; several thousand pounds can be harvested this way.

This popular food fish may move between islands or island groups as they are not always present near Guam. Little is known of these offshore movements. While there is no consistent season for harvesting atulai, the best months for atulai fishing appear to be from August to November.



FANIHI (Mariana fruit bat) *Pteropus mariannus*

Endangered Species

Endemic to the Marianas

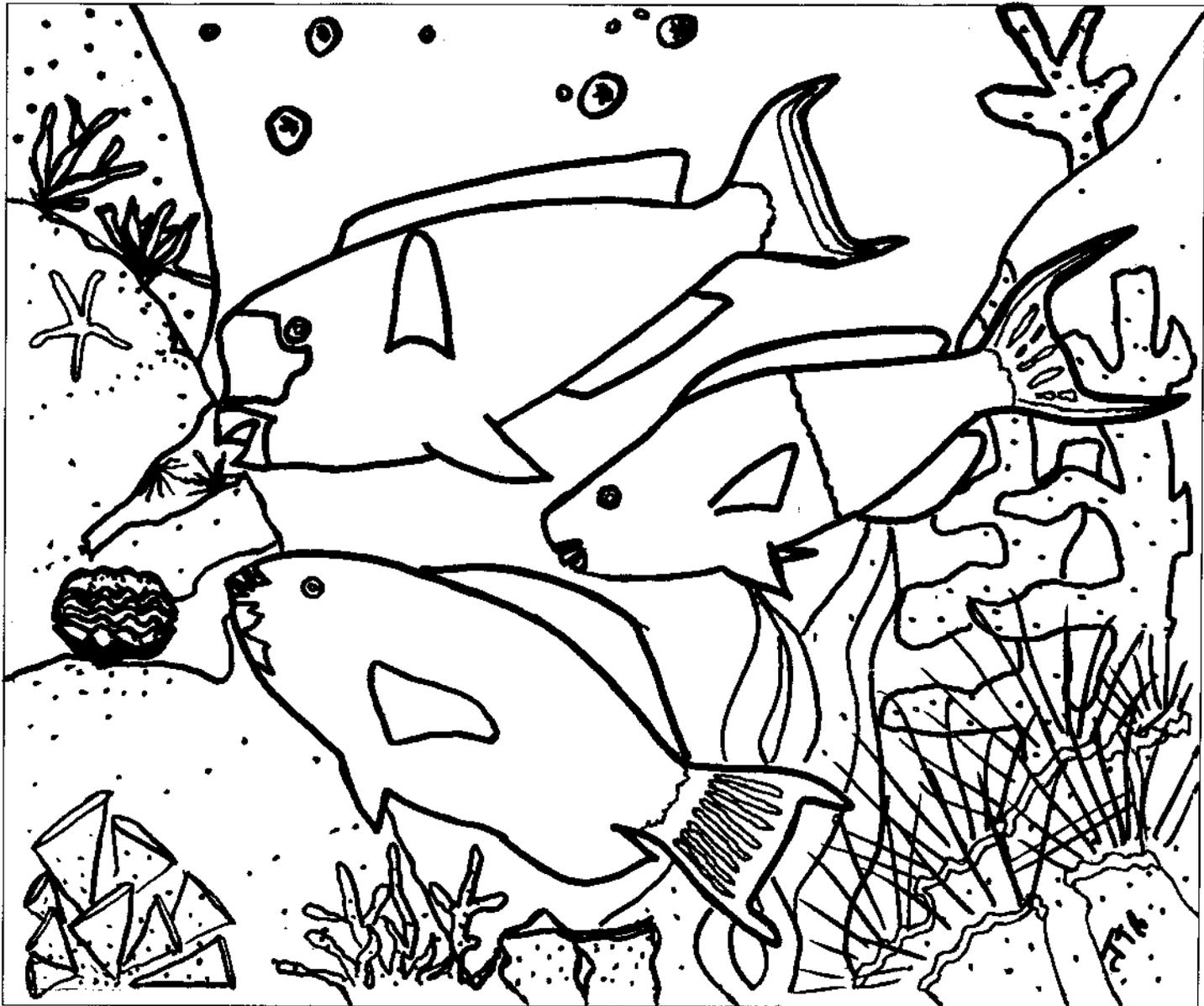
The fanihi, as the Mariana fruit bat is called in Chamorro, is one of Guam's endangered mammals. It lives only on Guam and the other Mariana Islands. At one time, huge flocks of fanihi filled the evening sky. Counts made by the Department of Agriculture's Division of Aquatic and Wildlife Resources show the number of fanihi left on Guam varies from about 200-600 bats annually, depending on how many fly back and forth to Rota.

Fanihi roost in trees during the day. They live together in groups or colonies. They have good eyesight and smell, and are most active at night. These graceful flyers eat the fruit of pandanus, breadfruit, wild figs, fagot, and cycads, and the flowers of kapok, coconut, and gaogao, plus many other fruits and blossoms. The fanihi has only one baby a year. The young fanihi clings to its mother and nurses milk from her until it is old enough to find food on its own.

Fanihi live deep in the forest where they will not be disturbed by people. At present, the most serious threat to fanihi on Guam is predation on young bats by the brown tree snake. Another problem is that fanihi are still hunted because many older Chamorros like to eat them. Over the years, many fanihi have been shot and eaten by people who do not care whether we have any fanihi left for future generations to see and appreciate. With nearly all of our forest birds gone, the fanihi is one of the few pollinators and seed dispersers left in the forest. Without the fanihi, many types of forest trees could disappear because there will be no animals left to spread their seeds and pollinate their flowers.

To protect the remaining population, the fanihi has been declared an endangered species, which means it is against local and federal laws to hunt, kill, capture, or in any way harm the fanihi.

A second smaller kind of fanihi, the little Mariana fruit bat (*Pteropus tokudae*) was found on our island, but it became extinct about 1970.



LÀGGUA (steephead parrotfish)

Scarus microrhinos

Parrotfish are closely related to the wrasses, called a'aga in Chamorro, but have teeth which are fused into a distinctive beak. They use this beak to scrape green filamentous algae from the surfaces of dead coral or rock. They also eat large amounts of the dead coral rock scraped loose by their beaks. The scraped particles are passed through and settle on the bottom as sand. Some parrotfishes also eat leafy seaweeds or coral. Most parrotfish travel and feed in groups, sometimes mixing with other algae-eating fishes such as surgeonfish and rabbitfish. Parrotfish sleep on the bottom at night, often tucked away into a hole.

Juvenile parrotfish are dull in color, usually brown to gray and often striped when less than about two inches long. Larger juveniles, females, and some males of most kinds are brown or gray (these are called palakse' in Chamorro). This is known as the initial phase because both male and female parrotfishes have this color phase after they lose their juvenile color. Some of the largest females eventually change color and sex to a brilliant and mostly blue and green color phase. At this stage, they are in the terminal phase and are called làggua in Chamorro. All terminal phase fish are males which started out as females. Males which started out as males cannot change to the terminal phase color pattern nor can they change sex.

The humphead parrotfish, called atuhong in Chamorro, reaches a size of about 47 inches (120 cm) and can weigh up to 165 pounds. Atuhong get much larger than other parrotfish and have a more prehistoric look to it than the smaller, streamlined parrotfish. The smaller parrotfish are caught by nets, although all sizes can be taken by spear. There are 19 different kinds of parrotfish in Guam's waters.



SIHEK (Micronesian kingfisher)

Halcyon cinnamomina cinnamomina

Endangered Species
Subspecies endemic to Guam

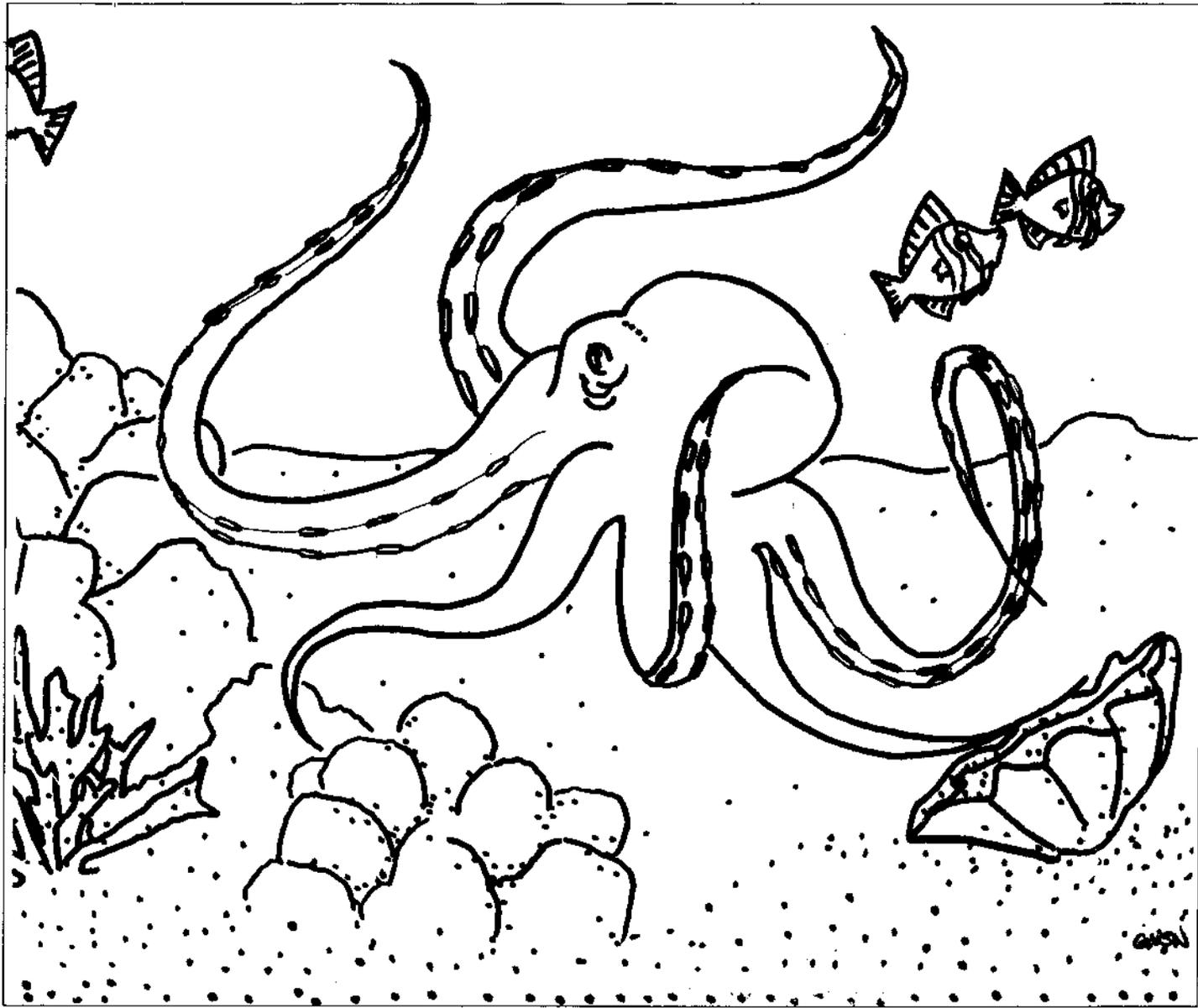
Extinct in the wild

Known as "sihek" in Chamorro, the Micronesian kingfisher is a colorful bird once very common on Guam. Predation by kulepbla (brown tree snakes) has brought about the extinction of the sihek population in the wild. The last sighting of a sihek in the wild was reported in 1989. A captive breeding program to save this bird from extinction began in 1984. As of early 1996, there are about 50 sihek in captivity at various zoos throughout the United States.

Kingfishers often are called "woodpeckers." They build nests by using their bills to hammer a hole in a tree trunk. Both parents raise two babies in the nest hole. The babies are fed juicy prey like lizards, crabs and insects. The parents kill their prey by banging it against a branch. Despite its common name, these kingfishers do not hunt fish. They are brave and will attack larger animals which get too close to their nest. Female sihek have a white breast while males have a tan breast.

Chamorro stories tell of a village woman who was always talking loudly and making trouble. She wore an orange kerchief and a blue dress with a white apron. An angry "tãotãomo'na" (spirit of Chamorro ancestors) turned the woman into the first sihek. Her clothing became the colors of the female sihek. Now, the unhappy bird calls loudly when people are near.

The Guam subspecies of sihek is endemic, which means it is found nowhere else in the world but on Guam. Other subspecies still remain in Palau and Pohnpei. Another species, the collared kingfisher (*Halcyon chloris*), occurs on many of the neighboring Mariana Islands. The sihek is protected by local and federal laws.



GÅMSON (octopus) *Octopus cyanea*

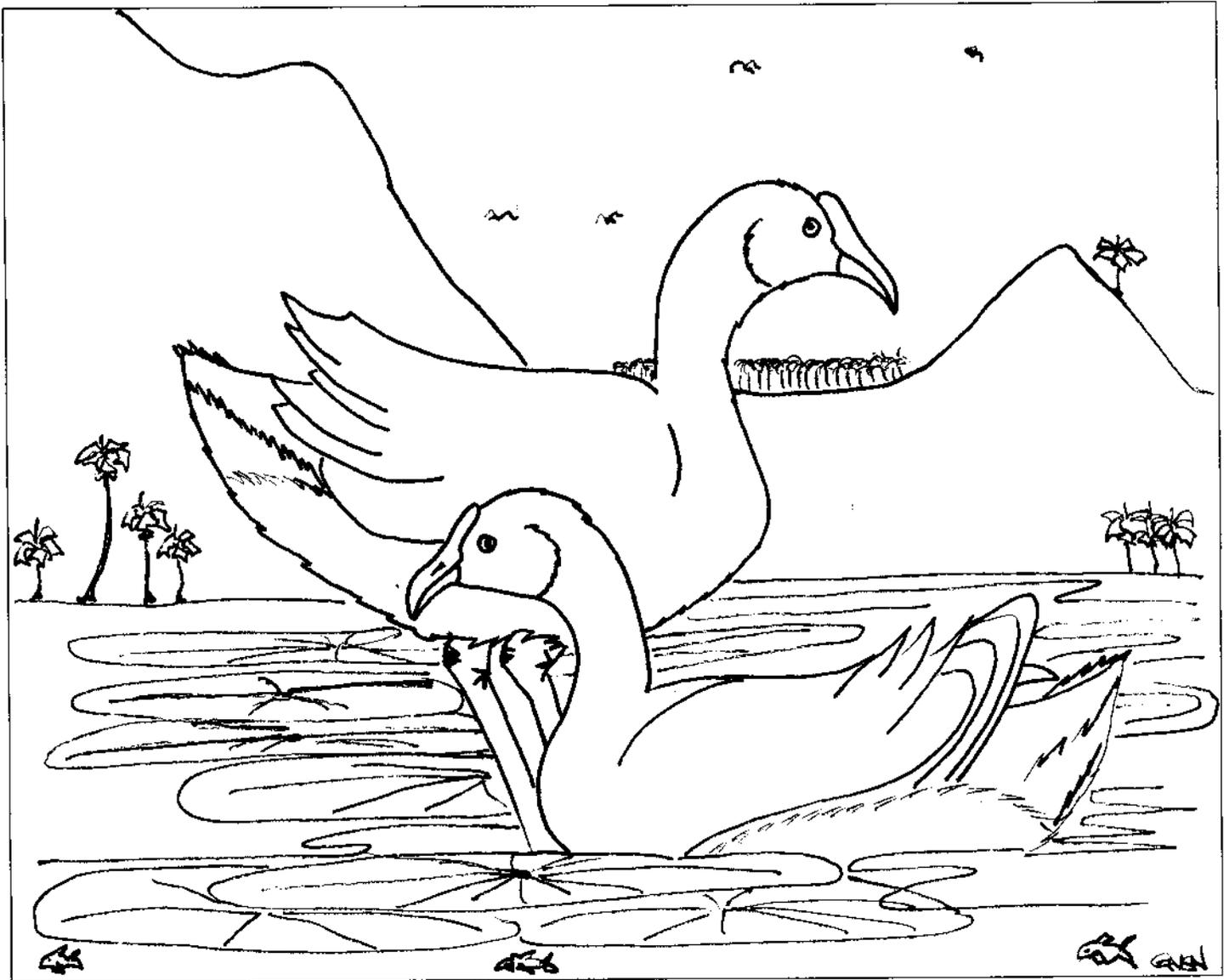
Gåmson, as the octopus is called in Chamorro, is a mollusk. It belongs to a large group which includes clams, snails, and other animals popularly known as "shells." It belongs to the cephalopod class, which includes squids, cuttlefishes (both called ngosngos in Chamorro) and nautilus. Cephalopods are among the most intelligent of marine animals. They have well-developed eyes and a beak-like mouth surrounded by tentacles with many suction cups.

The gåmson usually crawls slowly around the ocean floor. If startled however, it can use a strong blast of water to jet itself to safety. With the exception of nautilus, cephalopods are able to squirt a cloud of ink which helps them to escape from predators. All local cephalopods are edible.

The gåmson has eight arms and a distinct sac-like head which contains all the animal's organs. There are at least five kinds of gåmson in Guam's waters, but only one, (*Octopus cyanea*), is commonly seen or caught. One species can reach a large size, at least 43 pounds (19.5 kg) and more than 7 feet long (2.1 m) from the tips of its tentacles to the end of its head. Other species however, rarely weigh more than five pounds (2.3 kg).

Two smaller species, the white spotted octopus (*Octopus macropus*) and web foot octopus (*Octopus membranaceus*) come into the open primarily at night. The two small species have been photographed or collected in shallow reef waters.

The gåmson feeds mainly on crabs and shrimps which are paralyzed by a venom as they are bitten. The beak is then used to puncture holes in the shells and pick out the flesh. It also feeds on other mollusks and fishes. The gåmson is a highly-prized food item and is routinely speared by fishermen.



PULATTAT (common moorhen)

Gallinula chloropus guami

Endangered Species

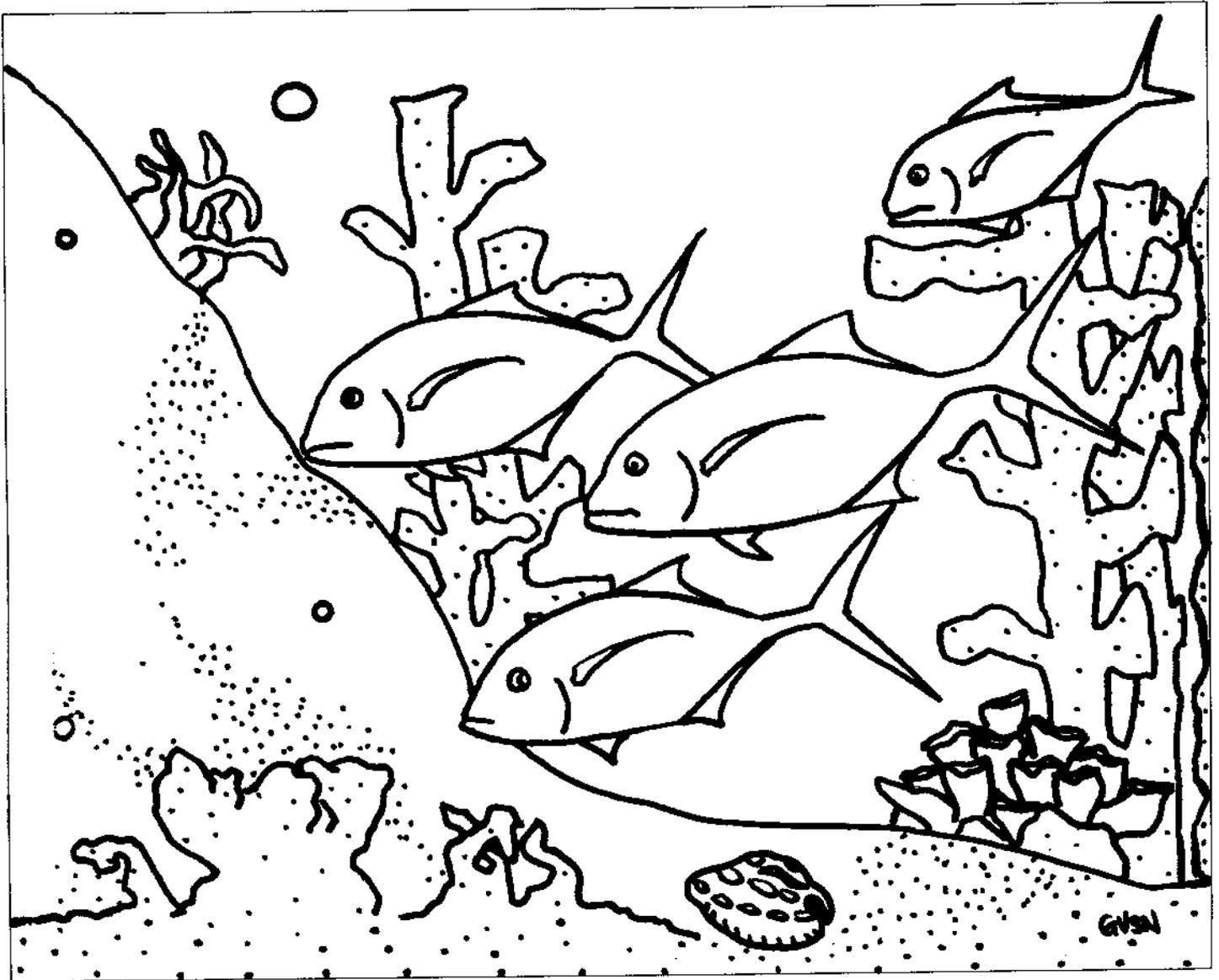
Subspecies endemic to the Marianas

This duck-like bird, called "pulattat" in Chamorro, is really a member of the rail family. Adults are black with a red forehead and beak. They live in wetlands such as Fena Lake, Agana Swamp, and smaller wetlands in southern and central Guam. They spend part of their time swimming in water and part walking in reedy areas along the shore. Although the pulattat's feet are not webbed, their long toes have lobes on them that make it possible for them to walk across plants floating in the water.

Pulattat eat plants, insects and snails. They make a hidden nest in the reeds, complete with an escape ramp to the water for the moorhen chicks to use when danger threatens. The female lays five to six eggs. Both parents sit on the eggs. When the eggs hatch the chicks are covered with fluffy black down. They have white feathery eyebrows and a white beak. Like most ground nesters, the chicks are able to run and protect themselves from predators soon after hatching. As they grow, their feathers turn brown and their beaks turn a dirty orange-brown. Finally, as adults, their feathers are black and their beak and forehead turn red.

These interesting birds once were fairly common in Guam's wetlands. As large areas of wetlands have been filled for development and less taro and rice are grown than in the past, there is less habitat for the pulattat.

The pulattat is on the federal and local endangered species lists. This means it is against the law to hurt, kill, harass, disturb or in any way, harm this bird.



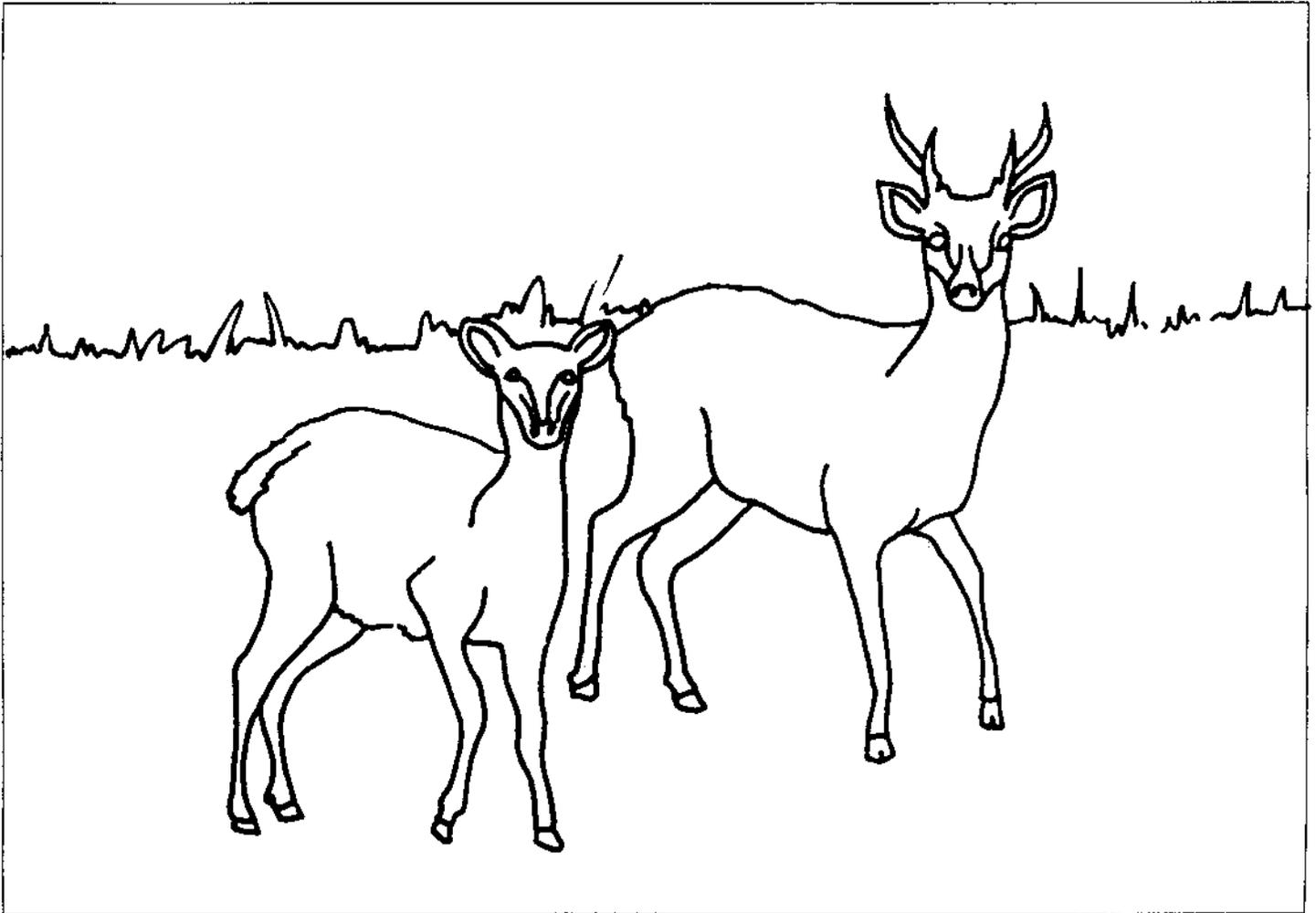
TARAKITU (bluefin trevally) *Caranx melampygus*

The bluefin trevally is Guam's most common reef-dwelling jack. Jacks are fast-swimming, silvery fishes which roam open waters above the deep and shallow reef. They have a series of bony scales called scutes, which reinforce the keel at the base of the tail. Some jacks look like tunas, but tunas do not have scutes.

There are many kinds of jacks in Guam's waters, including the trevallies, pompanos, amber jacks, round scads, rainbow runner, and bigeye scad (called atulai in Chamorro). Trevallies have wide, streamlined bodies and are quick and active predators. Typically, they feed on other fish or crustaceans, such as crabs and lobsters.

Jacks of all sizes and species are popular food fishes. Young jacks, called i'e', measure about three inches and migrate from the open sea to shallow shoreline waters during the summer months, feeding on small invertebrates and fish. They are easily caught with light tackle using a thin, triangular piece of opaque rubber as a lure. It is not an uncommon sight to see scores of anglers, young and old, fishing with their rods and reels at or around the Agana Boat Basin area.

Immature jacks of four to 10 inches (10 to 25 cm) in length are called "tarakitiyu" in Chamorro; those larger than 10 inches are called "tarakitu." The bluefin trevally reaches a length of about 30 inches (76 cm). Another kind, the giant trevally (*Caranx ignobilis*), gets much larger, sometimes up to four and a half feet (1.4 m) long and 150 pounds (68 kg). When the giant trevally measures over three feet (0.9 m), it is called "mamulan." Other kinds of jacks in Guam's waters include the "tarakiton amariyu" or golden trevally (*Gnathanodon speciosus*), which is found in deep lagoons and outer reefs; the "tarakiton áttelong" or black jack (*Caranx lugubris*), found off steep drop-offs and offshore banks, and the "tarakiton tailas" or bigeye trevally (*Caranx sexfasciatus*), which is frequently caught when night-light fishing for atulai.



BINĀDU (Philippine deer) *Cervus mariannus*

Introduced Species

Regulated Game Species

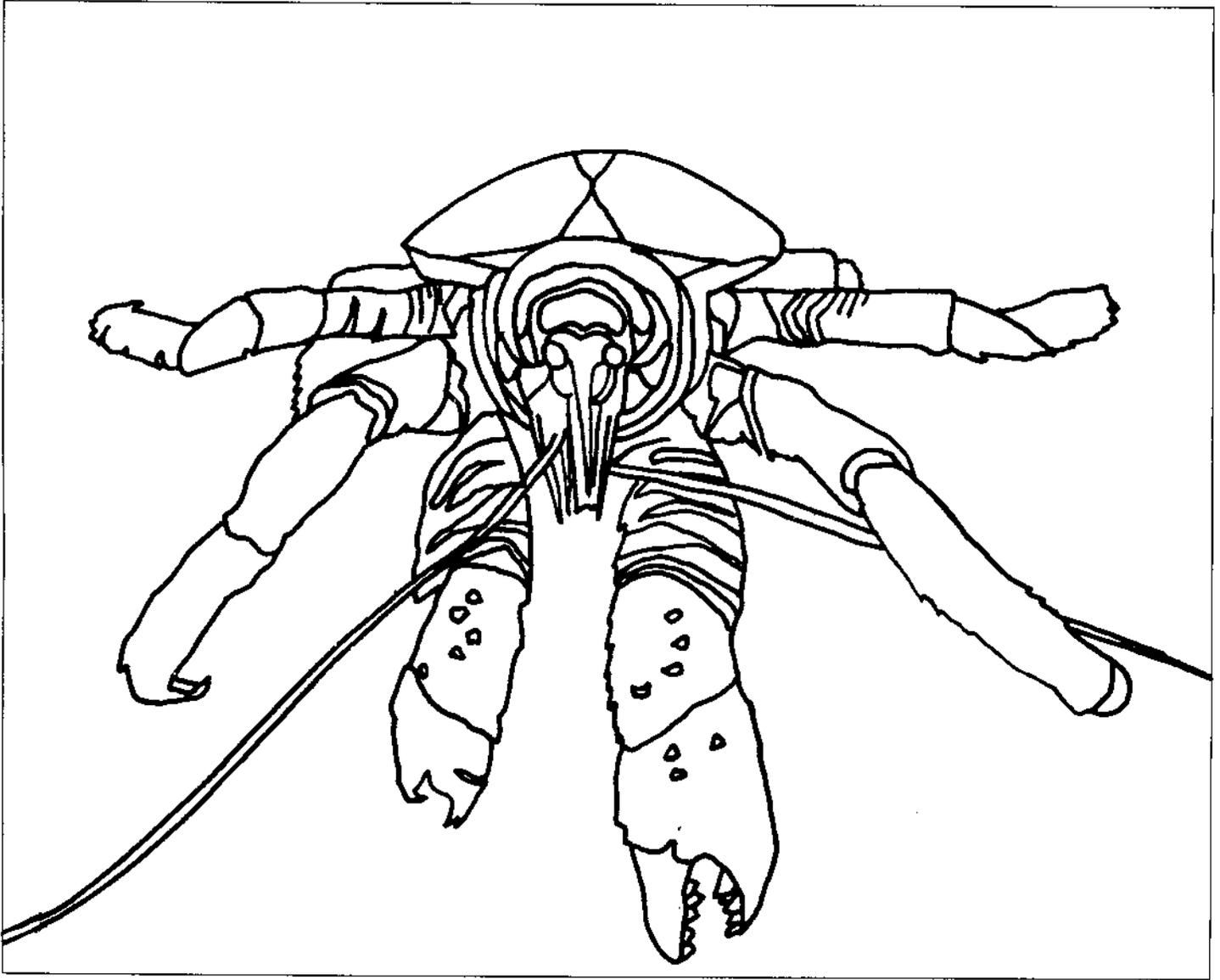
Binādu, or Philippine deer, were brought to Guam by the Spanish about 200 years ago. Originally from the Philippines, this species of deer adapted well to the environment on Guam and eventually spread all over the island.

Male deer are called bucks, or toru in Chamorro. They average about 125 pounds, but the largest ones can weigh as much as 300 pounds. Female deer or does, known as bāka in Chamorro, are smaller and average about 80 pounds. The bucks grow pointed antlers which are used to fight other males and to get the attention of does. The antlers fall off at the end of the breeding season and the buck grows a new, larger set the following year. Does very rarely have antlers; those that do are called "spiked does". Does have one fawn, or baby, each year.

Binādu are mostly found in the forest, where they eat a variety of bushes and grass. Does make a deep-throated barking sound, while bucks and fawns have a squeaky whining call. This animal is shy and sometimes easier to hear than see in the forest. Deer "sign," such as droppings (called pellets) and hoofprints, is more easily found.

Binādu are protected by law and may be hunted only by licensed hunters during the legal hunting season. Anyone 13 years or older is eligible for a hunting license, which can be purchased from the Department of Agriculture's Division of Aquatic and Wildlife Resources in Mangilao or at any authorized vendor. Deer hunting split-season runs from October through December and all of September the following year. Legal hunting hours are one-half hour before sunrise to one-half hour after sunset. Licensed hunters are allowed to take one antlered deer each season.

People who hunt deer all year long using spotlights at night are known as "poachers." This is against the law and bad for the deer population. It also deprives legal hunters and those who enjoy watching deer of their legitimate recreation. Deer generally are less common in the central and southern areas of the island, but are more plentiful in northern forests, especially in areas where they are protected from poaching.



AYUYU (coconut crab) *Birgus latro*

Native Species

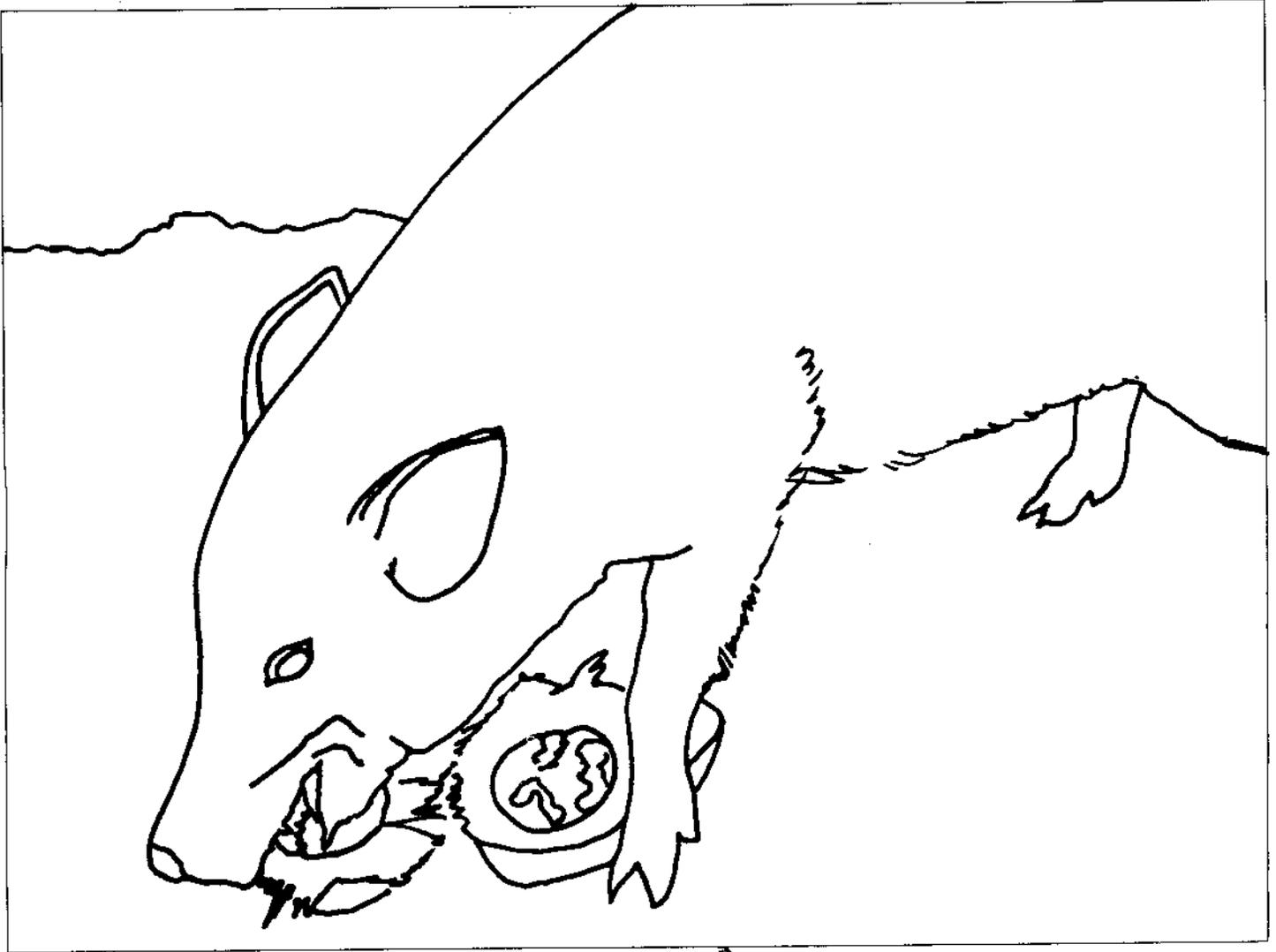
Regulated Species

Coconut crab, or ayuyu as it is called in Chamorro, is a very popular dish at fiestas and family parties because of its delicious taste. It can grow quite large, with a legspan of up to three feet (90 cm), but most are captured by crab hunters before they get anywhere close to this size.

Ayuyu are basically giant hermit crabs which begin their life in the sea. Adult females lay their eggs in the sea. The eggs hatch into tiny larvae which drift with the currents for a few months before settling to the bottom where they transform into tiny crabs. They then climb into a seashell and crawl up on the beach. At this time, they look very much like hermit crabs. Soon they leave their seashells and depend on their own hard shells for protection.

The ayuyu digs holes in which they hide during the day. At night, they come out to look for food. They will eat almost anything, including fruits, plants and rotten wood. Their favorite food, of course, is coconut. Using their strong claws, they tear away the tough coconut husk and then, somehow, crack the nut inside. If you are not familiar with coconut crabs, do not try to capture one. They have incredibly strong claws which can grip and tear any object within reach.

Full grown ayuyu have no natural enemies other than humans. Young ayuyu may be eaten by some predators which people have brought to the island, such as rats, wild pigs, dogs, and monitor lizards. Ayuyu grow very slowly and are easily overharvested. On Guam, giant ayuyu are rare, and even small ones have become hard to find. In some places, they are no longer found. The ayuyu may be hunted year-round, but its carapace, or shell, must measure three (7.5 cm) or more inches across. Taking undersized crabs is illegal and carries a penalty of up to \$500 or 90 days in jail, or both.



BABUEN HALOMTANO' (wild pig)

Sus scrofa

Regulated Game Species

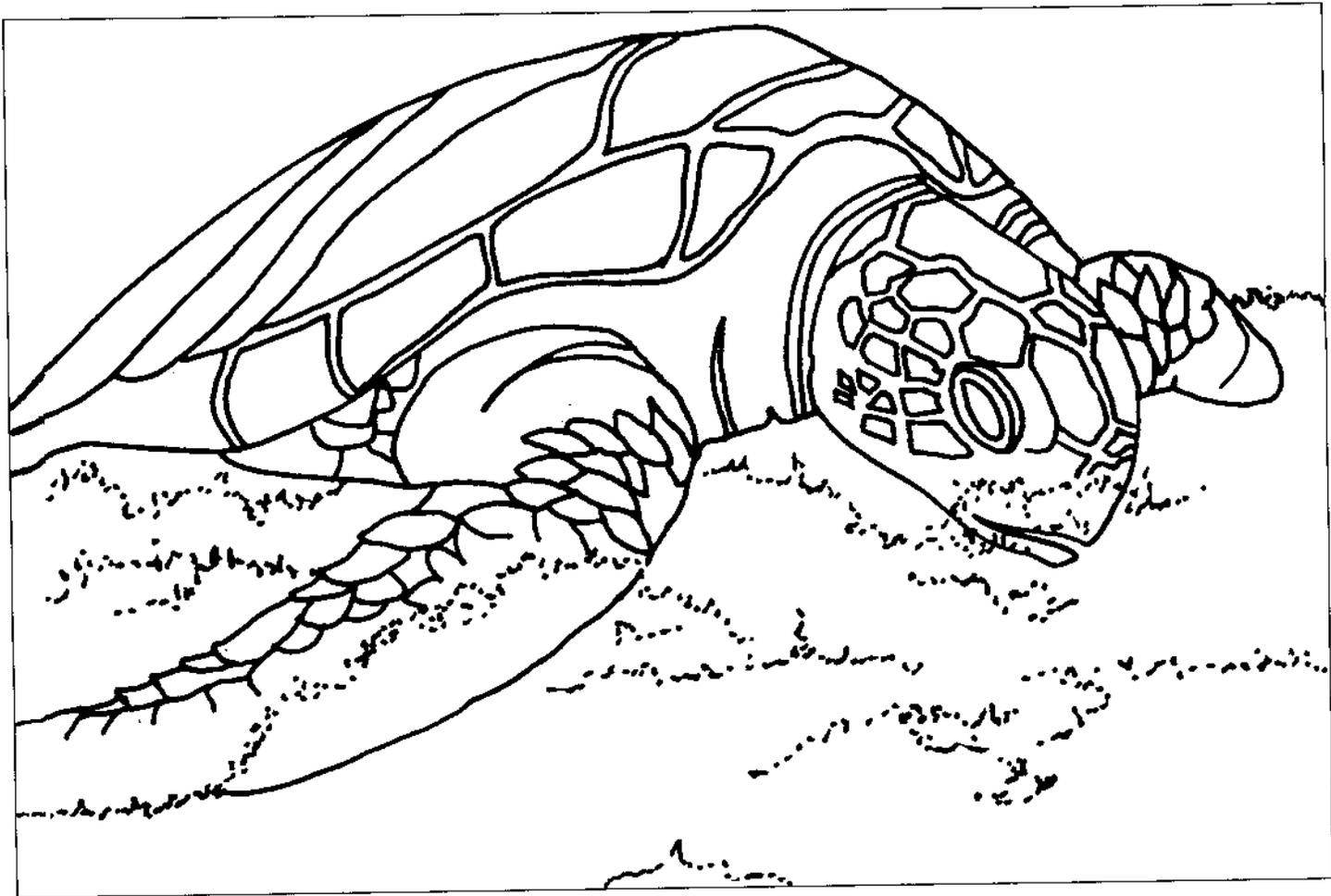
Domestic pigs were brought to Guam by the Spanish in the late 1600s. The first stock probably came from domestic herds in the Philippines and likely was introduced to feed the soldiers, government servants, and missionaries on Guam. Some of this domestic stock escaped from captivity or were intentionally released and established wild, free living populations in the forest, completely away from people. These were the ancestors of our wild pigs now found in the boonies.

Known in Chamorro as babuen halomtano', wild pigs are smaller than domestic pigs. Wild adult males, or boars, typically weigh from 50 to 120 pounds, but can weigh up to 300 pounds. Wild pigs usually are all black, with stiff bristle-like hair. Some are spotted with white and red. These mixed colors come from breeding with farmers' pigs. Both males and females have sharp canine teeth called tusks (or "kotniyos" in Chamorro) which are used for fighting and feeding. These grow to long lengths in males and are highly prized as trophies by hunters.

The babuen halomtano' can raise one litter of babies every eight months. They give birth to between one and 10 piglets, usually five. The piglets nurse from the sow, or mother, pig for about four months until they become big enough to find their own food. Pigs can eat almost anything. They dig in the forest floor with their noses searching for fallen fruits, young plants, coconuts and animals like worms and snails. They feed on farmers' crops, such as watermelon and taro, causing considerable damage. They also build and use wallows. Wallows are pits which trap water when it rains. Rooting, wallowing, and trampling by pigs can cause severe damage to forest and agricultural resources. Such damage is commonly seen in many of Guam's forests today.

Pig numbers have increased in recent years. They are common to abundant in northern limestone forests and less common in savanna habitat in central and southern areas.

Hunting of wild pigs provides a significant amount of recreation for island sportsmen. Wild pig season is year-round on Guam and the legal bag limit is two per day and 40 per season. Pigs may be hunted only with a hunting license and during legal hunting hours, which are a half hour before sunrise to a half hour after sunset.



HAGGAN (green sea turtle) *Chelonia mydas*

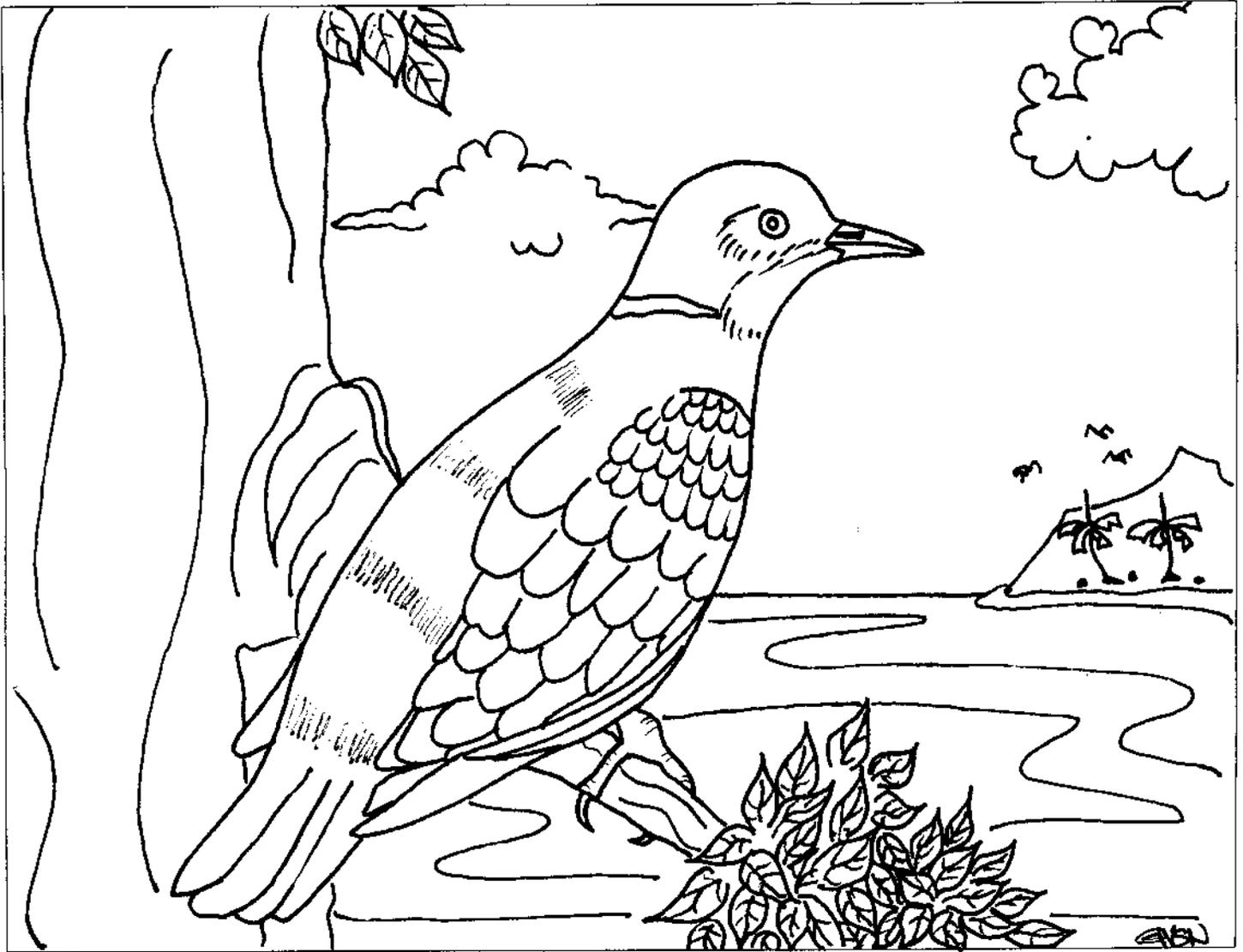
Endangered Species

Native Resident

The haggan, as the green sea turtle is known in Chamorro, is the most commonly sighted turtle in Guam's waters. They frequent the shallow reef areas while foraging for marine algae and seagrass. Fully grown adults can have a shell length of four feet (1.2 m) and can weigh more than 300 pounds (136 kg). Sea turtles are long-lived animals and grow reasonably slow, averaging about 0.4 inches (1 cm) a year until mature and then 0.2 inches (0.5 cm). Using these growth rates, larger adults are well over 50 years of age. The haggan is characterized by a shell colored with mottled shades of brown and a white to yellow underside. The shell plates are fused with no overlap, points or protrusions. The head has two plates between the eyes and each flipper has only one claw.

These turtles spend most of their lives in the ocean but adults return every few years to the beach where they were born. Mating takes place a month or two prior to egg laying near the nest site and mating continues through the egg laying cycle. Females must, on the average, be 23 years old to reach 32 inches (81 cm), the average size at first maturity. Once fertile, the female will crawl onto a sandy shoreline and use her flippers to dig a large pit above the high-water line near some vegetation. She lays 40-140 eggs, depending on her size, and covers them with sand. A female can lay as many as six clutches of eggs in one nesting season, which runs from April through July on Guam. The eggs take 50 to 90 days to hatch, depending on conditions. The eggs hatch near sunrise when two-inch (5 cm) long hatchlings emerge from their eggs, dig up through the sand, and start their journey to sea. Haggan still nest on some of the remote beaches throughout Guam.

Turtle meat and turtle eggs were once prized food sources on Guam. The shells were used for decorative purposes. World-wide concern for overharvesting however, has resulted in protection of the haggan under the federal and local Endangered Species Acts. It is illegal to capture, harass, possess, buy, sell, or transport the haggan or any part thereof, including, but not limited to, eggs, shells, shell jewelry, and meat.



PALUMAN SINISA **(Philippine turtle-dove)** *Streptopelia bitorquata*

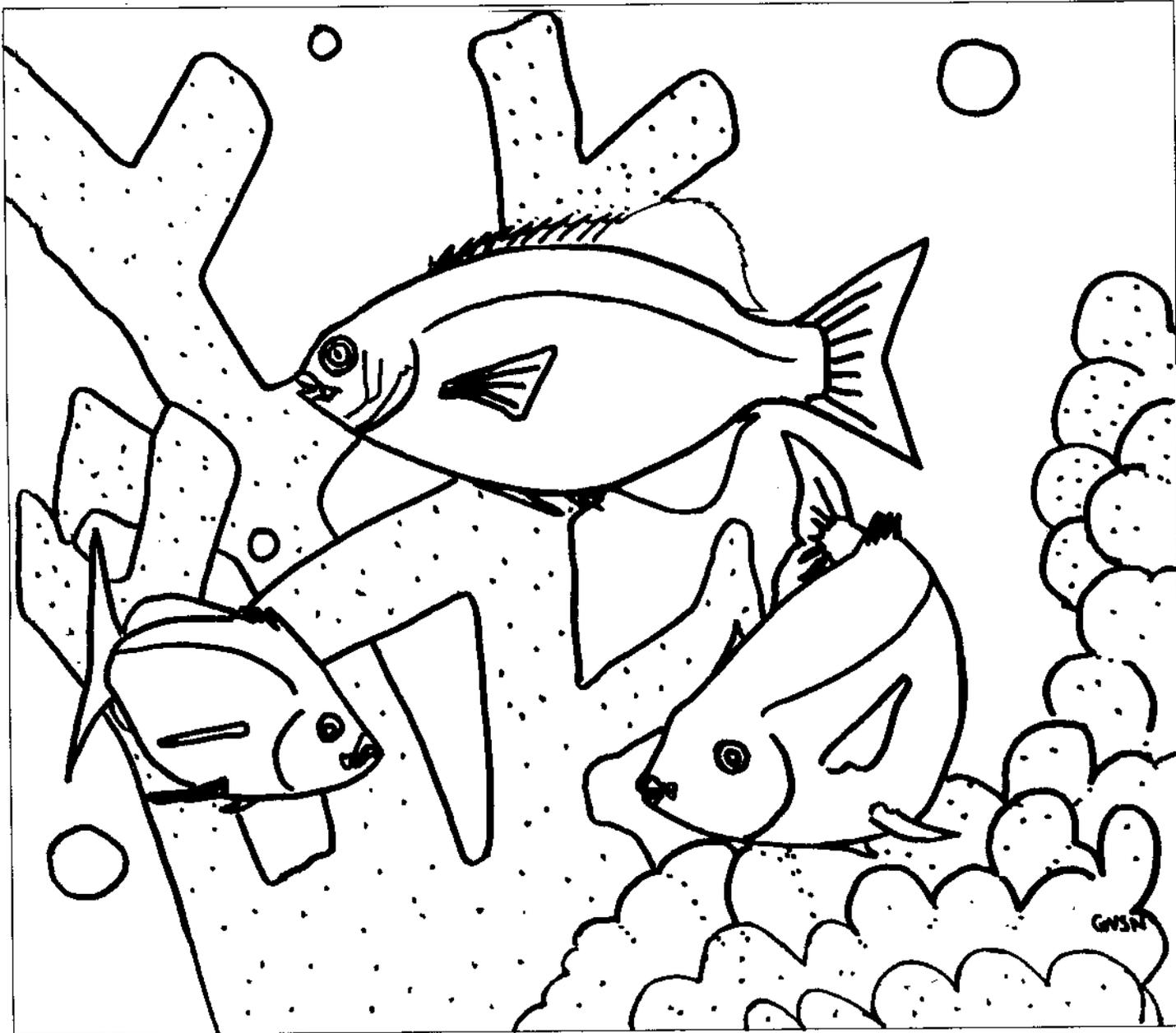
Introduced Species

Called the paluman sinisa in Chamorro, the Philippine turtle-dove was brought to Guam by the Spanish in the 1770s. Originally from the Philippines, this bird adapted well to Guam's environment and spread all over the island.

A member of the pigeon family, paluman sinisa eats seed and small fruits, which it stores in a sack in its throat, called a crop. The food is digested later.

This bird nests year-round on Guam. It makes a weak nest of twigs in small trees and shrubs. Two eggs are usually laid, which the adults take turn sitting on and incubating for 17 days. Once the baby doves hatch, they are fed "pigeon's milk," a white liquid made in the lining of the crop, for one to two weeks. At this age, the chicks have to stick their beaks into their parent's mouth to eat this food. As they get older, their diet shifts to seeds and fruit. They remain in the nest for about 16 to 19 days after hatching and during this time they grow flight feathers and learn to fly. After leaving the nest, the young usually stay nearby and continue to be fed by their parents.

Paluman sinisa were once numerous on Guam and a hunting season was set aside for this popular game bird. Although still found throughout the island, their numbers have declined in recent years and have since been taken off the game list, which means that it can no longer be hunted. Brown tree snake predation is the cause for the bird's decline. The snake eats the eggs and young of the turtle-doves. If the snake population can be controlled, the bird probably will recover quickly and can again be hunted.



GUILI (rudderfish) *Kyphosus vaigiensis*

Methods such as the taláya (cast net), tokcha' (spear fishing), or etupak (rod and reel) are usually used to catch the rudderfish, known in Chamorro as guili. An important traditional food fish, guili have small mouths with small closely-set teeth, much like human front teeth. While they feed mainly on plants, including the filamentous algae, and larger seaweeds, they also eat small bottom-dwelling animals and sewage. Young guili commonly are found far out at sea beneath floating debris. Larger ones are most numerous along the reef margin and steep rocky areas which are often wave-swept and dangerous. It takes great skill with the taláya to catch them.

There are three kinds of guili in the Marianas, but only two are common: the high fin rudderfish (*Kyphosus cinerascens*) which reaches a length of about 19 inches (48 cm), and the low fin rudderfish (*K. vaigiensis*) which grows to about 26 inches (66 cm). They can be distinguished by the height of the soft-rayed portion of the dorsal or upper fin. On the high fin rudderfish, this part is nearly twice as high as the spiny part of the dorsal fin; on the low fin rudderfish, both parts are about equal in height. The third and not-so-common guili is the insular rudderfish or brown chub (*Kyphosus bigibbus*).

All three guili have light silvery-gray and dark color phases as well as a light-spotted phase occasionally seen underwater. Although the species of guili are not distinguished by local fishermen, the color phases are. The lighter phase is known locally as "guili" while the dark phase is known as "guilen puengi" (puengi is the Chamorro word for night). Small guili under about 10 inches (25 cm) are called "geppan" because they move rapidly about the upper portion of the reef.



CHICHIRIKA (rufous fantail) Extinct

Endangered Species

Rhipidura rufifrons uraniae

Subspecies endemic to Guam

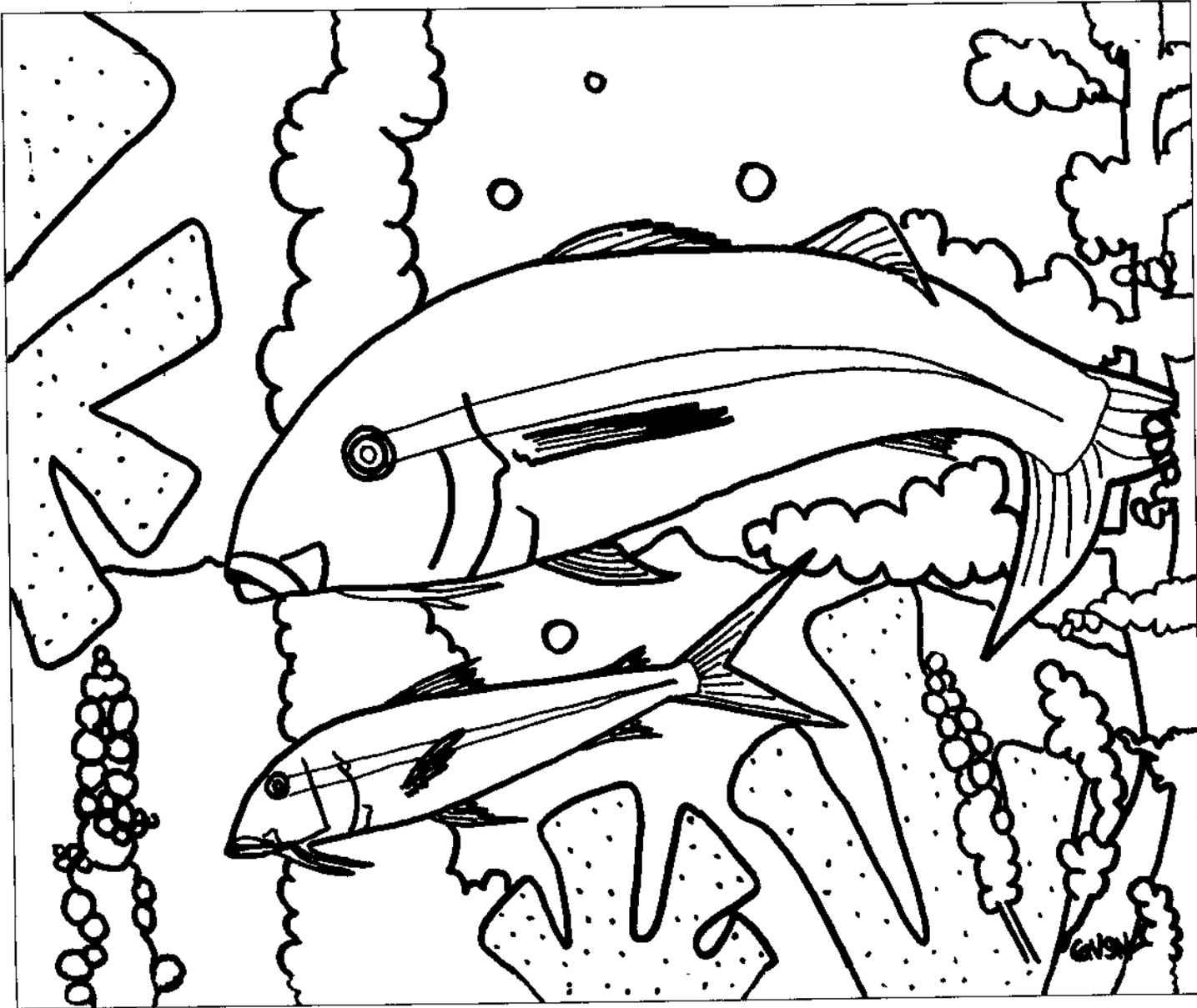
The "chichirika" as it was known in Chamorro, used to be found all over Guam, but they became extinct in the mid-1980s due to predation by the introduced brown tree snake.

Its common name, rufous fantail, came from its red-brown feathers and the habit of spreading its tail like a fan. When two male chichirika met, they challenged each other by jumping from branch to branch and flashing their tails. A male chichirika would show off for a female bird the same way.

Until the mid-80s, chichirika could be heard in the deep jungle singing beautiful songs. The songs were meant not only to help keep chichirika families together but also to warn strange chichirika to stay away. They often spent most of the day pecking bugs off leaves or flying out suddenly to grab insects in the air. Small bristles on the sides of their bills helped direct insects into their mouths.

Pairs of chichirika would build small nests of grasses, ironwood needles and spider webs, about ten feet above the ground. They would glue the nest together with their saliva. The eggs were cared for by both parents, who would often raise two families a year. The babies were born naked, but became fully feathered and could fly in about 15 days. Although similar chichirika are found elsewhere in the Mariana Islands, this subspecies was endemic to, or found nowhere else but, on Guam.

The chichirika has been confused with the introduced Eurasian Tree Sparrow, a small brown bird with a black chin and ear patches which is common throughout the island. Because its color and size were similar to the chichirika, and because it was never given a local name, the sparrow has come to be known as the chichirika.

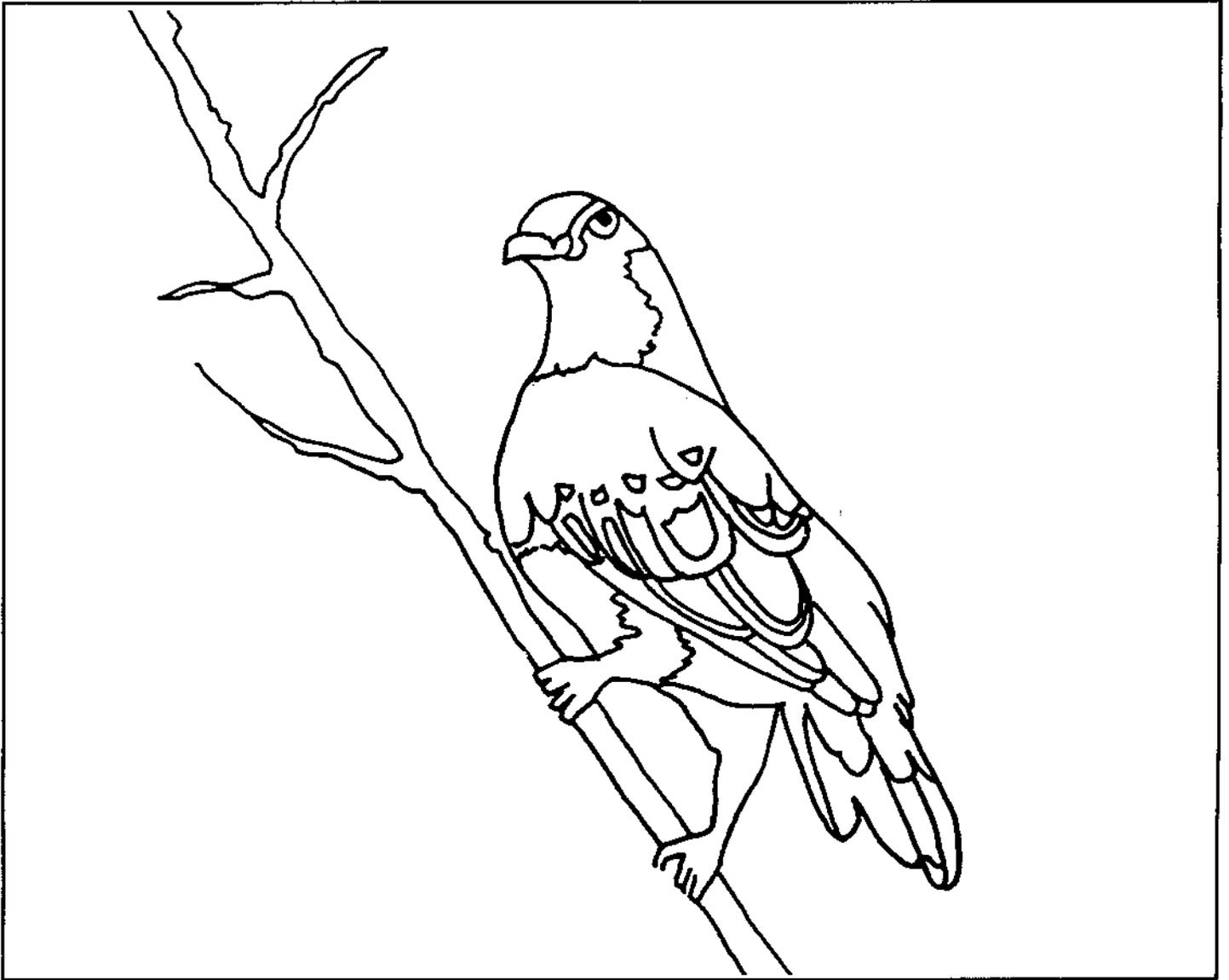


SATMONETI (goatfish)

Goatfish, or satmoneti as they are called in Chamorro, are bottom dwellers which have a pair of long barbels or whiskers under the chin. They use the barbels to search the bottom for small animals to eat. While most of the 13 kinds of satmoneti in Guam's waters feed on crabs, shrimps and other sand-dwelling animals, a few primarily feed on other fish. Most kinds hunt over sandy bottoms, but a few are found feeding over hard rock or coral bottoms.

Satmoneti are excellent to eat and are caught by a variety of methods. Young goatfish, called ti'ao in Chamorro, are caught by talâya (cast net), lâgua' (scoop net) and chenchulu (drag net). Larger goatfish, called satmoneti-yos, or satmoneti if over eight inches (20 cm), are caught by tekken (gill net), tokcha' (spear) and etupak (hook and line).

From the open sea, young goatfish swim to the reef as silvery post-larvae when they are about two to three inches long. Within a few days, they change to their adult color pattern and start feeding on the bottom. For the first several days on the reef, they are known as ti'ao. The most common goatfish, the yellowstripe goatfish (*Mulloidichthys flavolineatus*), arrive on the reef flats in large groups. Both young and adult yellowstripe goatfish are the most common kind of goatfish in shallow reef flat and lagoon waters. During the day they most often occur in large groups. Adults may be seen hovering in deeper parts of the reef flats near the shelter of corals. They disperse over the sand at night to feed and change their color to a blotched pattern with an elongate dark spot on their sides. A few individuals also feed during the day and are uniformly light with the elongate spot on the sides. The dash-and-dot goatfish (*Parupeneus barberinus*) is the largest kind of satmoneti and grows to about 24 inches (60 cm).



TOTTOT (Mariana fruit-dove)

Ptilinopus roseicapilla

Endangered Species
Endemic to the Marianas
Extinct on Guam

Called "tottot" in Chamorro, the Mariana fruit-dove once graced Guam's forests with its smooth cooing call and beautiful bright colors. Brown tree snake (kulepbla) predation, however, has caused its extinction on Guam, although an occasional sighting is still reported, especially after a storm hits Rota. The tottot is still found on other Mariana Islands, from Rota to Saipan.

The tottot has a purple cap, yellow and orange breast and bright yellow tail band. Its feathers are mostly green which allows them to blend into the leaves of trees as they make short flights to look for food. They eat fruits, such as figs, inkberry and papaya.

The tottot lays only one egg in a flimsy nest built in the fork of a branch. Like all doves, the young are fed a milky substance produced in the lining of the parent's throat sac or "crop." The young are later fed fruit which has been partially digested.

This shy, easily disturbed bird is especially significant for Guam because it is our Territorial Bird, the symbol of our island.

The Department of Agriculture's Division of Aquatic and Wildlife Resources hopes that one day, when the kulepbla population is controlled or eradicated, the tottot will be able to be reintroduced to Guam's forests.



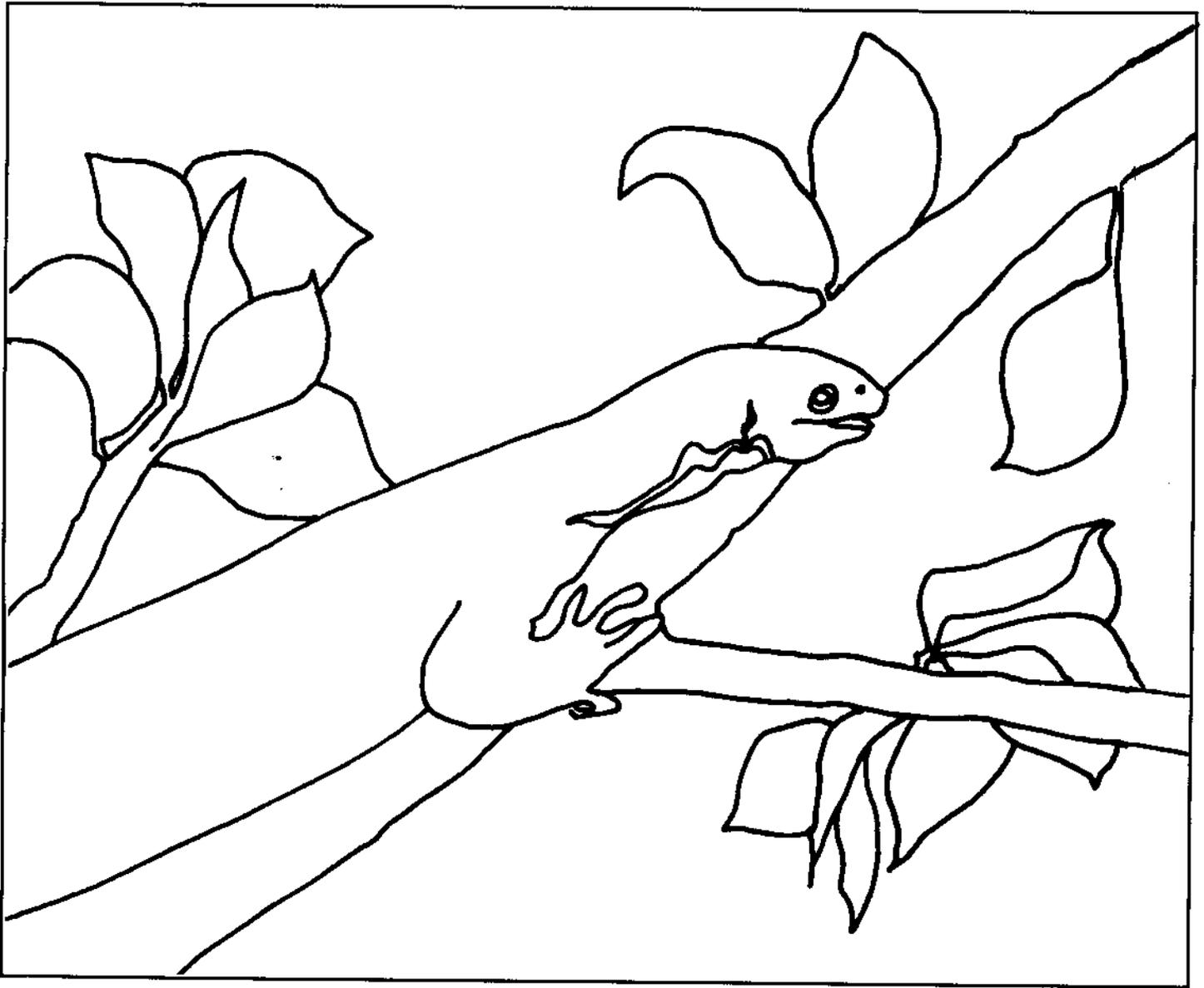
HIYOK (blue-banded surgeonfish)

Acanthurus lineatus

Surgeonfish get their name from a pair of sharp, retractable blade-like spines at the base of the tail. These are used for defense and can easily cut the hand of a careless fisherman. The blade of the blue banded surgeonfish, or hiyok as it is called in Chamorro, is hidden in a groove located in the middle of one of its blue stripes. All of Guam's surgeonfish are good to eat.

Hiyok occur in shallow, clear water where there is some wave action. While they are most common along the seaward reef margin, they also can occur on outer reef flats and the upper edge of lagoon reefs. They are usually found in small groups, made up of a territorial male and several females. Hiyok feed on filamentous algae cropped from the surfaces of dead coral or rock. They are among the more aggressive of surgeonfish and defend a patch of reef against other algae-eating fish such as parrotfish, rabbitfish, and other surgeonfish. Small hiyok are popular aquariumfish, but they need a large tank with clear, well-oxygenated water. They grow to about 11 inches (28 cm). They are most often caught by spear (tokcha' guihan) although they can also be caught by cast net (talåya), gill net (tekken) and surround net (chenchulu).

There are several other kinds of surgeonfish, many of which are blue, brown, or black. They are known as "hugupão." The surgeonfish group consistently ranks at the top of the list of fish most caught on Guam's reefs.



HILITAI (monitor lizard) *Varanus indicus*

Introduced Species

This handsomely-spotted lizard is often mistakenly called an iguana, but Micronesia has no true iguanas. The monitor lizard, or "hilitai" as it is called in Chamorro, has a pattern of yellow or white spots on a dark green background which blends with jungle leaves.

Like kulepbla (brown tree snakes), hilitai have scales arranged in neat rows and overlap like shingles or fit closely together like tiles. They are cold-blooded, which means that their body temperature is the same as the temperature of their surroundings. They often are seen laying in the sun on rocks and logs to stay warm.

No one knows how the hilitai got to Guam, but it is certain that they have been in Micronesia for a long time. They are very well adapted to island living and can run with considerable speed, climb trees, dig holes and swim.

A three-foot (90 cm) long hilitai is about average size. Deep in the jungle, they may grow to four or five feet (1.2-1.5 m). These reptiles will eat almost anything they can catch, including insects, snails, smaller lizards, rats, crabs, birds, bird eggs and dead animals. They can even catch fish in the water.

The hilitai digs a hole under a rock or tree for a nesting den. In this hole, the female lays between eight to 12 eggs, each about the size of a chicken's egg, but with a soft, leather-like shell. They are found everywhere on Guam although their numbers may have decreased due to hunting and predation of young by snakes.

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1997

Funded in its entirety by the U. S. Department of Interior, Fish and Wildlife Service through the Federal Aid to Fish and Wildlife Restoration Program, Project FW-3C-5, administered by the Government of Guam Department of Agriculture, Division of Aquatic and Wildlife Resources.