

NATURAL HISTORY

THE NATURE OF THE MIYAKO ISLANDS

The Miyako Islands are located just about in the middle of the 80 or so large and small islands that make up the Ryukyu Archipelago. They lie approximately 850 km from Kyushu's Osumi Peninsula and about 450 km from Taiwan. Latitude ranges from 24 degrees 30' to 50' North and longitude ranges 125 degrees 10' to 30' East.

Ground stratification consists of the most part of a covering of Ryukyu Limestone from the 4th Cenozoic Period (approximately 1.5 million years ago.) Underneath that layer is an accumulation of Shimajiri Clay from the Pliocene Period that is approximately 5 million years old.

The climate is sub-tropical and strongly influenced by the Japanese Black Stream currents.

Biological life on the Miyako Islands is specific to the Islands' geographical position, geological age, regional characteristics as well as climate. To date, there have been 740 varieties of plant life, 650 species of insects, 23 kinds of reptilian and amphibian life, 254 types of birds and 8 varieties of mammals recorded.

MIYAKO'S CLIMATE

Miyako has a sub-tropical climate that includes high temperatures and high humidity. Including a yearly temperature average of 23 degrees Celsius and humidity of 80%, the year-round climate is fairly temperate.

The coldest period during the year is from January to February with low temperatures of 10-15 degrees Celsius. Following the rainy season which lasts from the middle of May to the middle of June, summer arrives with high temperatures of over 30 degrees Celsius continuing on until about September.

Typhoon season lasts from summer until about October and strong typhoons tend to come about September. Typhoons wreak havoc on agriculture but the good news is that they bring much needed rain as well.

Mornings and evening are cool during October and the temperatures easier to bear. It is at this time that the legendary migrating Grey – Faced Buzzard Eagle (*Butastur Indicus*) comes to Miyako.

After the birds set out again for their migration south, the seasonal northern winds become stronger and winter arrives in Miyako.

PRECIPITATION CYCLE

Miyako is a small, flat island, built up of layers of limestone surrounded completely by the sea. The island's high temperature and high humidity climate consists of a yearly average temperature of 23 degrees Celsius, with an average humidity of 80% and a yearly average rainfall of 2,300 mm.

So then, what happens to the rainwater that falls on Miyako Island? Even though there may be clouds in the sky, there are no water tanks. There are many natural effects of the circulation of vapor that has been created because of the evaporation of water from the surface of the land and sea. As water evaporates it condenses to form clouds. These clouds, in turn, produce droplets of water over 1 mm in diameter, which, again falls to the ground and sea. Approximately 38% of the rainwater that falls on Miyako evaporates naturally, about 20% runs off into the sea and roughly the 42% that remains ends up as ground water. Grounds water flows down underground and forms into an underground spring, which, in turn gushes water out into the sea.

Therefore, the water that evaporates from the land and sea forms clouds in the atmosphere and falls to earth again as rain. As the water falls onto the ground it goes underground and flows as groundwater - which drains off into the sea. It is this water cycle that keeps Miyako's nature lush.

THE UNDERGROUND WATER TABLES OF MIYAKO ISLAND

It is said that the amount of rain that falls on Miyako annually reaches up to approximately 3.6 billion cubic meters. Of that, close to half flows off the ground's surface, soaks into the ground and is saved as ground water.

So, why does Miyako Island have an underground water table that acts like a water tank?

There is a saying that; “water flows back to its source” and you can compare Miyako Island to that source because of the following special characteristics of the shape and quality of Miyako's land allowing water to flow and gather underground:

1. Differing from other regions, there is a wide range of high-absorbency Ryukyu Limestone and weathered soil on Miyako.
2. An impermeable layer of clay lies at the bottom of the structural geological foundation of the island.
3. Due to geological upheaval and fault and rift creation, the basal rock and limestone bed had cut and bent into folded walls to form table-like formations underground.

Miyako Island has five such groupings of ground water tables located in 23 places.

THE UNDERGROUND DAMS OF MIYAKO ISLAND

The whole of Miyako Island is made up of Ryukyu Limestone. The island's topsoil is shallow and, what's more, it doesn't possess strong water retention properties. Because of this, every year when summer comes, the farms suffer a great deal from drought as the growth of the crops is affected. It is basically for this reason that dams were built underground to resolve this problem.

The island's annual rainfall is about 2,300 mm however about 42% of this drains through the Ryukyu Limestone and ends up as ground water. Most of this ground water settles at the level of impermeable clay that makes up the underground water tables while the rest flows out into the sea.

The underground dams of Miyako Island are walls built along these underground waterways designed to stop the water from flowing out into the sea and consequently, raise the water level. What is more is that this water is pumped up above ground so as to be used as a water supply for the fields.

The special characteristic of these underground dams is that they don't simply divert river water like usual dams, but preserve the rainwater that soaks underground so that it is available on the surface in order that villages and agricultural land can benefit from it. This type of damming tends to be much safer, unlike with above water river dams, where either man-made or natural mishaps can easily occur.

Once this project is completed, it is projected that 250,000 tons of water will be retained daily - providing water to about 4000 hectares of fields. In the past, Miyako Island was known as an island extremely lacking in water but, with this project, the people of Miyako can finally realize their long awaited dream. In particular, this project will allow for a new age of farming for farmers as well as the production and manufacture of new varieties of tropical fruits, flowers and trees.

1. THE DAWN OF THE SHIMAJIRI SEA

About the time of the Miocene Period, during the Third Period in the Cenozoic Era (about 10 million years ago,) the Ryukyu Archipelago was contained within one large land mass. By the time of the Pliocene Period (about 5 million years ago,) Miyako's lowlands and central regions underwent geological changes and broke up the land mass. At that time, what is now referred to as the Shimajiri Sea, was created. It is also from that period that, the gray-colored clay that is referred to as "*Kuchiya*" accumulated and became the base stratum rock (Shimajiri Clay) for Miyako Island.

2. THE SEASIDE CLIFFS OF SHIMAJIRI

On the seaside cliffs located to the north of Shimajiri village in the northern part of Miyako Island, the base stratum made up of a layer of clay and sand from the Third Period of the Cenozoic Era created a formation typical of this era. From this stratum, fossilized remains of elephants, whales, sharks, clams, and insects have been discovered. This also indicates that Miyako Island was once located in the sea close to the Asian Continent.

3. THE FORMATION OF THE LAND BRIDGE

Approximately, 1.5 million years ago, the built up layers of sand and mud in the Shimajiri Sea had created a land bridge that spanned the distance to Taiwan and the Asian Continent. There is evidence that points to this in the form of layers of limestone that lie upon a gray-colored layer of clay. These two layers are not consistent with the geological makeup the region. There have also been fossils recovered of elephants, deer, mice, turtles and the *Habu* Snake throughout various parts of Okinawa Prefecture that further indicates this was the case.

4. GEOLOGICAL IRREGULARITY

In Miyako's geology, there is a layer of limestone resting on a layer of clay. This occurs after a layer of clay had accumulated in the sea to form a land mass that once more became submerged in the sea. On top of this, a layer of limestone had formed. Thus, there is a geological irregularity between the top two layers and the bottom two layers - pointing to evidence that, at one time, land had been eroded, and the accumulation of soil interrupted.

5. THE FORMATION OF THE RYUKYU CORAL SEA

Approximately one million years ago, the land bridge collapsed and broke apart due to geological upheaval. The areas surrounding the collapsed remains became filled with coral reefs. The sea created at that time became known as the Ryukyu Coral Sea.

Presently, there is also a large land mass in the northeast part of Miyako Island, but when today's Miyako Islands were all submerged, there was a shallow coral reef in the sea.

6. THE LIMESTONE OF MIYAKO ISLAND

The broken pieces of accumulated Ryukyu Limestone that are scattered among the coral reefs that inhabit Miyako's shallow Coral Sea are referred to as Miyako Limestone. A special characteristic of this type of limestone is the number of large deposits of fossilized remains of coral and algae, clams, sea urchins, insects etc. These fossils resemble the varieties of life found in the Coral Sea today. Thus, there are signs that indicate that a coral sea had existed prior to geological upheaval.

7. THE INTRODUCTION OF MANKIND

Approximately 2 million years ago, as a result of geological upheaval, a thick layer of limestone had accumulated and formed a land mass. During the latter part of the Ice Age, (during the peak of the Ulm Ice Age,) a land bridge had formed for the third time as a result of the accumulation of coral.

During this period, it is thought that, as they migrated north, people and animals came to Miyako from the Asian Continent.

8. FOSSIL REMAINS OF ANIMALS

Fossilized remains of animals have been found in Pinzaabu of Ueno Village. The very interesting thing about this is that this is the first instance that fossilized bones of field mice and man have been found in the Miyako Islands.

It thus becomes clear that there was migration of human beings and animals from the Asian Continent.

9. THE FORMATION OF THE ISLANDS

From about between five and ten thousand years ago, after the earth began warming up following the Ice Age and the ice that once covered land began to melt and form seas, the sea level began to rise and the low land areas went into the sea. The areas surrounding the Miyako Islands also underwent land shifts and eight islands were created.

The Yonaha and Oura bays and the Sawada Beach are very scenic and one can see how, Karimata Seaside, which stretches out like the horns of a bull, was at one time connected with nearby Ikema Island.

10. THE CORAL SEA

In the Miyako Islands there is what are known as the “Yabiji” or the “Phantom Continent” coral reefs surrounding the island. There one can see many kinds of coral and shell varieties, sea urchins and sea cucumbers among others. Miyako Island limestone is formed from the carcasses of these sea creatures.

THE AVE FAUNA OF THE MIYAKO ISLANDS

Although the main type of genus of tree found in the Miyako Islands is the Tabunoki, unlike other prefectures, there are the varieties specific to tropical regions such as the Adanki, Gunbaihirugao, Kusatobera and the Gajumaru which are varieties that can be found anywhere on the islands.

There are 132 species, 450 genus, 592 varieties and 6 subgenus categorized within the wild fauna of the region, once you include the immigrant plant life then the numbers increase to 134 species, 513 genus, 707 varieties and 6 subgenus.

Compared to other islands in Okinawa Prefecture, the varieties of fauna are not so numerous nor particularly characteristic. Varieties of Maple, Oak, Shiinoki and Mochinoki found on the island are not indigenous.

The following varieties, however, are distributed around the island: Sakishimaenoki (*Celtis biondii Pampanini var. insularis*), Miyakojimaso, Oonukakibi (*Panicum paludosum*), Tenjikunasubi, Taiwanchitosegasura (*Gardenia shimadae*.) These have come across from the Yaeyama Islands and spread across this region as well. The species found in the northern limit consist of 9 genus and 24 varieties such as Indohimokazura (*Deeringa polysperma*), Fujibogusa, Hirugidamashi (*Avicennia marina*), Ketanuki mana etc. There is no southern limit but if one stops at the Yaeyama region then, of 25 genuses, there are five distributed throughout the region. Examples of such are Isunoki, Masaki, Taranoki, etc.

BIRDS OF THE MIYAKO ISLANDS

To date there have been 254 species of birds recorded on the Miyako Islands. Of that number, 4%, or 11 species, are like the Ruddy Kingfisher (*Halcyon Coromanda*) and the Black Paradise Flycatcher (*Terpsiphone Atrocaudata*) who migrate in the spring, lay their eggs, rear their chicks and leave again in the fall. The Sparrow (*Passer muntanus*) and Japanese White-eye (*Zosterops japonica*.) year-long inhabitants make up 22 varieties or 9% of the total. The White Belly and duck varieties that leave their northern homes and migrate to the Miyako Islands for the summer make up 55 varieties, or 22%. The remaining 166 varieties, or 65%, include the varieties of snipe and plover who use the Miyako Islands as a relay station during their migration to the southern islands as well as those birds such as the White Stork (*Ciconia ciconia boyciana*) that get flown off their normal migratory patterns and arrive in Miyako due to weather conditions such as typhoons.

BIRDS OF THE IKEMA ISLAND MARSHLANDS

The marshlands on Ikema Island lie within the central part of the island and take up about 25 hectares and are home to a variety of treasured species of waterfowl. Species that are characteristic to this subtropical region are the Futoi, Himegama, Inukurogai, and, a relative of the Tade – the Sosuzumenohie – can be found in numerous numbers. The Cinnamon Bittern (*Ixobrychus cinnamomeus*.) Little Grebe (*Tachybaptus ruficollis*.) Spot-bill Duck (*Anas poecilorhyncha*.) Ban (*Gallinula chloropus*.) and

Hikuina propagate here as well. Conditions are good as there is both plentiful water and shade. During winter, the Blue and Purple Egret (*Ardea purpurea*), the Large and Intermediate Egret (*Egretta intermedia intermedia*), Small Egret (*Egretta Garzetta*), Black Egret (*Egretta Sarca*), Yoshigoi, Oyoshigoi (*Ixobrychus eurhythmus*), Shimaaji, Hidori Duck, Ma Duck, Small Duck (*Anas crecca*), Hashibiro Duck, Kinkurobajiro, Suzu Duck, Coot (*Fulica atra atra*), and the Bittern (*Butaurus stellaris stellaris*) can be seen.

THE INSECTS OF THE MIYAKO ISLANDS

Although labeled the “Galapagos of the Orient,” because of the large variety of insects found in Okinawa - in Miyako’s case, because of its’ relative short geological history, the lack of mountains and rivers and the narrow variety of vegetation - there is not an abundance in the variety of insects inhabiting the islands.

The main species of insects found on the island are as follows:

Dragonfly – 20 varieties including the Narrow-bellied Dragonfly (*Orthetrum sabina sabina Drury*)

Cockroach – 10 varieties including the Household Cockroach

Praying Mantis – 4 varieties including the Wide-bellied Praying Mantis

Grasshopper/Locust – 17 varieties including the Shoryo Grasshopper and Taiwanese Ground Locust

Katydid – 10 varieties including the Taiwanese Horse Katydid

Cricket – 9 varieties including the Black Cricket

Stick Bug – 3 varieties including the Miyako Twig Stick Bug

Cicada – 4 varieties including the Miyako Ni-ni Cicada (*Platypleura miyakona*)

Butterfly – 52 varieties including the Black-sinewed Kabamadara (*Salatura genutia CRAMER*) variety

Moth – 153 varieties including the Ryukyu Ousukashibana variety

Goldbug – 13 varieties including the Miyako Nose-body and Miyako Aodougane variety

Longhorn Bug – 27 varieties including the Household Longhorn Bug

Bee – 42 varieties including the Taiwanese Long-legged Bee

WHAT IS THE GREY-FACED BUZZARD EAGLE?

This type of bird is classified as follows:

Phylum: *Vertebrate*

Class: *Aves*

Order: *Accipitriformes*

Family: *Accipitridae*

Genus: *Butastur*

Breeding in the low mountainous and hill regions as a summer visitor to the southern part of Akita Prefecture, they flock to the Miyako Islands while migrating south during the fall season.

Breeding occurs once a year during May and June. They lay two to four eggs, which incubate for 28-30 days. The chicks leave the nest after 34-36 days. The main food source is mice, snakes, lizards, frogs, sparrows, and insects.

The young hawks have black eyes tinged with blue (called Omi in the Miyako dialect,) which turns to a cloudy blue (Tarikasumi.) As the hawks mature, the colors become yellow tinged with red (Akami) and yellow (Kinmi) and the vertical stripes on the crest become horizontal.

There are still many aspects of the birds' migratory course that are still unknown but generally, prior to the final wintering destination among the islands of Indonesia in Southeast Asia, the following points along the migratory route are known:

Irako Cape in Aichi Prefecture; Saita Cape in Kagoshima Prefecture; Tokunoshima; Miyako Islands; Taiwan; Battan Islands; and The Philippines.

THE MIGRATION OF THE CHINESE SPARROW HAWK

The Chinese Sparrow Hawk (*Accipiter Soloensis*) doesn't breed in Japan but in the Northeastern parts of China and the Korean Peninsula. It is understood to migrate to the islands of Malaysia and the Philippines as well

as to Papua New Guinea in the fall. There are still few recorded sightings of these birds that occasionally go off their normal migratory pattern to appear in Japan.

A small number of migrating Chinese Sparrow Hawks were spotted in the larger wooded areas and hills of Miyako Island in September of 1980. It was later found to be that on about September 10th for about two weeks the numbers in fact rivaled the scale of the Grey-Faced Buzzard Eagle migration!

They are called the “Migrating hawk of the Autumnal Equinox” as they tend to migrate during this time.

It is known that, at present, the Chinese Sparrow Hawk flies from its breeding grounds in the Korean Peninsula to the west coast of the island of Kyushu. Then onto Amami Island, the Okinawan Mainland, Miyako Island, and stopping to rest on Ishigaki Island before the final leg of its final journey to Southeast Asia.

THE MAMMALS, REPTILES, AND AMPHIBIANS OF THE MIYAKO ISLANDS

The eight varieties of mammals that have been indexed on the Miyako Islands include the Jacko Mouse (*Suncus murinus*) and the Yellow Weasel. The Yellow Weasel was introduced on the late 1960's to eradicate mice in the region. Reptiles include the variety of species of turtle such as the one type of Yaeyama Rock Turtle, a variety of lizard species that include the five types of Kishinoueto Lizard (*Eumeces Kishinouyei*) and Miyako Lizard (*Emoia Atrocostata*.) Six types of gecko include the Minami Gecko (*Gekko Japonicus*) and Tashiro Gecko (*Hemidactylus Bowring*) and seven types of snake include the Miyako Hibaa (*Amphiesma pryeri concelarum*) and Hime Snake (*Calamaria Pfefferi*.)

The Kishinoueto Lizard (*Eumeces Kishinouyei*) a protected species, is

Japan's largest, and is found in the northern parts of the Miyako Islands. The Miyako Lizard (*Emoia Atrocostata*) can be spotted on the rocks of the coast and is found only on the Miyako Islands. The treasured Hime Snake can only be found on Miyako and Irabu Islands.

Of the amphibian species, four varieties can be found on Miyako. These are the Hiki (*Bufo Bufo Miyakonis*), Numa (*Rana Limnocharis Limnochalis*), Himeama, (*Microhyla Ornata*) and White-chinned Frogs. The Miyako Hiki Frog (*Bufo Bufo Miyakonis*) is found only on Nanboku Ryodaitojima 南北両大東島 and Miyako Island. Breeding season lasts from October to December when the frogs gather at their egg-laying grounds and fight for their right to mate.

THE SMALL CREATURES OF THE MID-TIDE SHORE

Mid-Tide is the conditions of a seacoast between the times of high and low tide. Land alternately covered by the sea and exposed to the elements twice every day result in these conditions. Despite the harsh conditions, many unique varieties of life can be found inhabiting these shores. Along the beach one can find the Iso Crab and Clam, lugworms etc.

The number and variety of creatures that inhabit the Mid Tide areas depend on whether they are found in ground depressions, reef rock, sand or mud. Within the reef rock areas many varieties of shellfish exist such as the Potato, Tamakibi, Amaobune, and Konpeito Clams as well as varieties of shrimp, crab, sea urchin and starfish. Other varieties such as the Bivalve Clam can be found in the sandy and muddy areas during mid-tide as well as small creatures such as the Shiomaneki (*Uca arcuata*), and Minamikometsuki Crab (*Mictyris brevidactylus*.)

The creatures that inhabit mid-tide conditions have adapted to the severe conditions that exist between high and low tide and are thus able to form a beltway of sea life that inhabits these shores.

CONSTELLATIONS DURING SPRING (APRIL)

Looking up into the Northern sky, one can see a group of seven stars that line up to form a dipper lying on its side. This is the Big Dipper (Great Bear Constellation.) If you look eastward, starting from the handle, you will see an orange colored bright star; this is Arcturus of the Bootes Constellation. If you proceed even further you will spot the white shining star located in the southeastern sky. Looking at the Spika of the Virgo Constellation, from the handle of the dipper to the Spika there is a curve and that is referred to as the “Big Spring Curve.”

Proceeding further from the curved handle once comes upon the square shaped Corvus Constellation and the tail of the Hydra Constellation. Arcturus and Spika, along with the Westerly Denebora of the Leo Constellation, come together to form an equilateral triangle. This triangular formation is called the “Big Spring Triangle.”

In the southern sky there is a bright shining star on the lowest point of the Leo Constellation called the Regulus and to the west lies the faint cloud-like Cancer Constellation and underneath that is the distant circle of stars that form the head of the Hydra Constellation.

To the south of the handle of the Big Dipper lies the Canes Venatici Constellation and close to the Denebora, of the Leo Constellation, a triangular shaped group of dim stars make up the Coma Berenices Constellation.

Other constellations in the Northern sky include the Corona Borealis, Draco, Auriga, Peruses, and Cassiopeia. In the Southern sky one can see the Canis Major and Minor, Vela, Puppis, Crater, and Libra constellations.

CONSTELLATIONS DURING SUMMER (JULY)

The Milky Way runs from the Northeastern to the Southeastern sky. In the center of the S-shaped Scorpius Constellation lies the big red star Antares. To the east lies the Sagittarius Constellation, to the North the

pentagon-shaped Ophiuchus Constellation, above that in the heavens one can see an H-shaped group of stars; this is called the Hercules Constellation. To the west lies a fallen C-shaped constellation of stars called the Corona Borealis.

On top of the Sagittarius Constellation there is the Altair star of the Aquila Constellation famous for the Star Festival in Japan. Across from the Altair star on the west edge of the Milky Way shines the Vega Star of the Lyra Constellation.

In the North, tying the Vega and Altair stars together is a trail of stars in the shape of a large cross is the Swan Constellation. The Alpha Star along with the Vega and Altair are three bright stars that form an isosceles triangle. This is called the “The Big Summer Triangle.”

In the northern sky, the reverse of the Little Dipper is the Ursa Minor (Little Bear) Constellation on top of that is the Draco Constellation. In the west lies the Ursa Major (Big Bear) Constellation, the Canes Venatici (Hunting Dog) Constellation etc. To the East lies the Cepheus Constellation, Cassiopeia Constellation etc. In the Southern sky lies the Libra Constellation, Virgo, Corvus, Delphinus, Lupus, Centaurus, Capricornus, Serpens Constellations can be seen.

CONSTELLATIONS DURING AUTUMN (OCTOBER)

As the Big Triangle leans towards the western sky the Pegasus Constellation appears in the autumn eastern sky. Sporting silver wings the square-shaped body is the center of the autumn constellations. In the southern direction of this square shape four individual dimly lit stars known as the Aquarius Constellation appear in a small Y-shape. Underneath lies only one bright star in the autumn sky – the Fomalhaut of the Piscis Austrinus Constellation. East from this, near the tail of the Cetus Constellation, is the Second star Deneb. Above that, the Pisces Constellation, which contains the vernal equinoctial point.

When you measure the square shape of the Pegasus Constellation with that

of the dipper, the dipper handle appears bigger and you reach upon the Andromeda Constellation, going along the handle one can spot the Peruses Constellation. Furthermore, to the east of the Andromeda Constellation lie the Triangulum and Aries Constellations.

In the Northern sky above Polaris (The North Star) is the reverse pentagon-shaped Cepheus Constellation. Next to that are the five bright stars that form a W-shape, which is known as the Cassiopeia Constellation. Continuing along the Perseus Constellation, go off the path and from the west you have the Sagittarius, Capricornus, Aquarius, Pisces, and Aries Constellations.

Others include, in the northern sky the Ursa Minor, Draco, Lyra, Hercules, Bootes and the Corona Borealis Constellations. In the southern sky there are the Phoenix, Delphinus, Grus and the Indus Constellations can be seen.

CONSTELLATIONS DURING WINTER (JANUARY)

When the typical summer constellation Scorpius hides in the west then the famous Orion appears within the unique set of winter constellations. The “Three Stars of Orion” wrap like a belt; the first stars the glowing red Betelgeuse and the blue-white Rigel with the remaining four stars encompassing in a rectangle shape

Nearing the zenith in the southern sky, only a group of six stars lie shining brightly together. This is the famous Pleiades grouping. To the southeast lies the V-shaped grouping called the Hyades grouping in the center of the Taurus Constellation and right next to that the grouping’s Alpha star, the red first star - Aldebaran.

Underneath Taurus, flowing like a river is the Eridanus Constellation winding southwest until it disappears over the horizon. In the southeastern sky of the brightest stars shines brightly the Alpha star Sirius of the Canis Major Constellation. East, to the zenith, where the Perseus Constellation is lies the Alpha star Capella of the pentagon-shaped Auriga Constellation.

In the eastern sky, above the Orion Constellation, are the Good Brothers - the number one and two stars: Pollux and Castor of the Gemini Constellation. To the south lies the brightly shining Alpha star, Procyon, of the Canis Minor Constellation. Procyon, Orion's Betelgeuse and Canis Major's Sirius together form to make an Isosceles Triangle, which is called "The Big Triangle of Winter."

In the Southern heavens, appearing as a pure white smudge, shining dimly in the center of the Puresebe grouping are the Cancer, Lepus, Columba, Pisces, Cetus constellations. In the Northern heavens lie numerous constellations such as Leo, Ursa Major, Cassiopeia, Cepheus, Andromeda, Pegasus, Ursa Minor, and Draco among others.

MIYAKO ISLAND'S TYPHOON NUMBER 2

At 3 a.m. on the 29th of August 1966; a slight tropical depression formed over the Northeast Sea off the island of Saipan. By 9 a.m. of the 31st, it grew to become Typhoon No. 18 and given the moniker "Cora." By 10 am of September 15th it came to approximately 20 km off the southwest coast of Miyako.

The typhoon's movement near Miyako was extremely slow - it only averaged about 8 km per hour. Because of this, within a radius of 50km for 11 hours, and within 100km for 21 hours, from past midnight of the 15th the typhoon continued to rage until 9:30 p.m. the following night with speeds of over 25 m/s. During that time at about 6am wind speeds increased to close to 40 m/s.

The typhoon was at the peak of its strength as it passed Miyako. Central atmospheric pressure was at 918 millibars; wind speeds of 65 m/s were reached. With over a 25m storm radius of 200 to 250km this was a powerful typhoon.

The top wind speed of 85.3 m/s from the Northeast recorded in Miyako is held as the top ever recorded over flat ground within Japan.

As a result of this typhoon in Miyako Island; 41 people suffered serious

injuries, 2,768 buildings were completely destroyed, 4,756 homes were partially destroyed, 5,977 shelters were totally destroyed, 2,634 shelters were partially destroyed, 2 boats were sunk or washed out to sea, 48 vessels were wrecked. 40% of the sugar cane was lost, and 53% of the yam and vegetable crops were totally destroyed. This tragedy certainly had wide ranging effects.