２．沖縄県のがかかえる環境問題の現況と課題
２－１ 亜熱帯の自然環境の現況と課題
２－１－１ 海域生態系
現況
沖縄県の各島々の周辺にはサンゴ礁が発達し、多種多様な生態系が形成されていますが、サンゴの白化現象やオニヒトデの大量発生、埋立による荒廃、干潟の減少、さらに赤土等の流入による海域汚染などが深刻な環境問題となっています。
【サンゴ礁】
本県では、約370種余のサンゴ類が生活しています。建造サンゴ礁がつくりだすサンゴ礁は、自然の防波堤として県外の保全に大きな役割を果たしているほか、景観、漁業や観光の資源として、様々なライフサイクルの場として、県民には知られている恵みをもたらしています。
【藻場】
海藻藻場は、多くの魚介類の生息場、過場としてのならず、産卵場、幼体等の幼体の繁殖場として機能し、「海のゆりかご」として知られている。また、海藻藻場をつくる海藻類が海に貴重なされる国の天然記念物であるジュゴンの他アオウミガメ、魚類等の直接の食となっている。
【干潟】
本県では、浦川川の様に比較的大きな河川がある沖縄島や石垣島、沖縄県にとまった規模の干潟が存在しています。また、広大な泥干潟が形成されている国際的な河口部の満潮帯は、ラムサール条約登録地となっており、波須魚をはじめ多くの陸上生物の良好な生息場となっています。
【マングローブ域】
河口に広がるマングローブ域のヒルギ等の種が生息する環境は、底生生物の幼生や稚魚などにとって、捕食者の逃走場、育成場となっており、多種多様な魚類、甲殻類、貝類等が、豊かな生態系を形成しています。
【自然海岸】
本県はアカウミガメ、アオウミガメ、タイマイの3種類のウミガメが産卵のため上陸します。日本では、3種類のウミガメが産卵する地域は本県だけで、これら繁殖地を保護することは、ウミガメの保護を図る観点から重要であると考えられます。
課題
サンゴの白化現象のメカニズムの解明
オニヒトデによるサンゴの被害の防止
サンゴ礁、藻場、マングローブ域、干潟等機能の維持及び生態系の保全
自然海岸の保全、復元等
2-1-2 Terrestrial Ecosystems

**Current Conditions**
- The mountains of northern Okinawa Island and the Yaeyama region are covered in extensive natural forests of broad-leaved evergreens, primarily Itajii (Castanopsis sieboldii) trees. The diverse, unique flora and fauna have global importance.

**Flora**
- The northern area of Okinawa Island has natural forests of broad-leaved evergreens of genus Castanopsis. The south-central section of the island, on the other hand, has long been inhabited by humans, and is largely cultivated with a few pockets of natural vegetation remaining in sacred groves.
- Much of the Miyako Islands has been cultivated for sugarcane and other crops. Limited natural vegetation can be found on the cliffs along the coastline, and in sacred groves.
- The hillsides and mountains of the Ishigaki and Iriomote islands are also covered with broad-leaved evergreens of genus Castanopsis. Iriomote Island has dense forests with trees as tall as 20 meters. There are rich mangrove forests in Ishigaki Island's Miyara River Island and Iriomote's Nakama River.

**Fauna**
- Okinawa Prefecture is home to numerous indigenous species and subspecies, as well as to wildlife whose northern or southern distribution boundaries are in Okinawa. So diverse and unique is the fauna that Okinawa is often called the Galapagos of the Orient. The Government of Japan has designated the Iriomote cat, the Okinawa woodpecker, the Crested serpent eagle, and the Albatross as Special Natural Monuments, and 15 species including the Ryukyu long-tailed giant rat, Okinawa rail, and the Yambaru long-armed scarab beetle as Natural Monuments.

**Alien Species**
- Okinawa Prefecture is inhabited by many alien and naturalized species such as the mongoose, which seriously affects native species such as the Okinawa rail.

**Challenges**
- Strengthen land use regulations and provide guidance for proper land use.
- Reinforce monitoring to stem alterations of habitats and breeding grounds of rare wildlife, as well as illegal poaching.
- Conduct detailed surveys and research on the lifecycle, habitat, and population of each rare species, to better understand their ecology and living environments.
- Promote surveys and research on, and measures against, alien species.
2-1-3 Freshwater Ecosystems

Current Conditions

Many of the fish, crustaceans and shellfish species in the freshwaters of the Nansei Islands are amphidromous, migrating between ocean and fresh water environments (spawning in the rivers, spending larval stages in the ocean, and migrating up the rivers in adulthood).

Compared to the rivers of southern and central Okinawa Island, the northern rivers remain relatively unpolluted and rich in wildlife. The academically important species inhabiting this area include the Blue Belly middle egg-goby (Rhinogobius sp. BB) and Okinawa great freshwater crab (Geothelphusa levicervix). However, their habitats are disappearing due to the erosion of fine red silt into rivers from agricultural and other development in upstream areas, as well as artificial development of the river channels.

The rivers in southern and central Okinawa Island are heavily polluted by effluents from households and livestock farms. River improvements focused only on flood control have also disrupted the river ecosystems. But in some areas where nature is still intact, important species such as the Killifish (Oryzias latipes) and the Sakamoto's fresh water crab (Geothelphusa sakamotoana) still remain.

Ishigaki and Iriomote Islands have relatively large rivers, with estuaries covered by mangrove forests more extensive than those of Okinawa Island. The fauna in these rivers are highly rich in diversity.

The rivers in the forests of northern Okinawa Island provide habitat for the larvae of frog species indigenous to the Ryukyu Islands, such as Ishikawa's frog, Holst's frog, and the Ryukyu tip-nosed frog. Anderson's crocodile newt, indigenous to Okinawa and the Tokashiki Islands, breeds in the puddles and wetlands inside the woods of the headwater area.

Alien Species

Following World War II, the Ryukyu ayu became extinct, and other native fish populations such as the killifish and paradise fish are significantly thinning. However, alien species are rapidly multiplying. Alien species such as tilapia and guppies are especially prominent in southern Okinawa Island, eliminating native fish species in many areas.

Challenges

- Strengthen land use regulations; provide guidance for proper land use.
- Coordinate area and size of projects that accompany development and economic activities.
- Reinforce monitoring against alterations of habitats and breeding grounds of rare wildlife, as well as illegal poaching.
- Promote surveys and research on, and establish technologies for, the protection and propagation of important wildlife species.
- Strengthen controls on the import and marketing of pets to prevent alien species from impacting the wildlife species native to Okinawa.