ABSTRACTS OF RESEARCH PROJECT, GRANT-IN-AID
FOR SCIENTIFIC RESEARCH (2000)

1. RESEARCH INSTITUTION NUMBER:12301
2. RESEARCH INSTITUTION: GUNMA UNIVERSITY
3. CATEGORY: GRANT-IN-AID FOR SCIENTIFIC RESEARCH (C)(1)
4. TERM OF PROJECT: (1999-2000)
5. PROJECT NUMBER: 11680525
6. TITLE OF PROJECT: A BASIC STUDY FOR CO-CONSERVATION OF GEOGRAPHICAL AND BIOLOGICAL LANDSCAPES IN A VOLCANIC REGION.
7. HEAD INVESTIGATOR: 20008155 SATOSHI NOMURA GUNMA UNIVERSITY, FACULTY OF SOCIAL AND INFORMATION STUDIES, PROFESSOR.
8. INVESTIGATORS: (1) 80251015 SHINICHI ISHIKAWA GUNMA UNIVERSITY, FACULTY OF SOCIAL AND INFORMATION STUDIES, LECTURER.
(2) 80092565 SEIJI TOKUMASU UNIVERSITY OF TSUKUBA, INSTITUTE OF BIOLOGICAL SCIENCES, VICE PROFESSOR.
(3) 40292510 JUNICHI ABE UNIVERSITY OF TSUKUBA, INSTITUTE OF AGRICULTURE, ASSISTANT PROFESSOR.
9. SUMMARY OF RESEARCH RESULTS:

ALPINE PLANTS DISTRIBUTION PATTERNS AT MT. KUSATSU MOTOSHIRANE WERE DESCRIBED AND SOME RELATED ENVIRONMENTAL FACTORS WERE INVESTIGATED. AT THE KARAGAMA VOLCANIC CRATER, HIGHER AREA OF THE CRATER WALL IS MAINLY COVERED WITH *ABIES VEITCHII* AND *BETULA ERMANII*, AND LOWER AREA IS COVERED WITH *PINUS PUMILA* AND *VACCINIUM ULIGINOSUM*. THIS DISTRIBUTION PATTERN IS CONTRARY TO THE GENERAL PATTERN OF THESE SPECIES. CONTINUOUS AIR TEMPERATURE MEASUREMENT REVEALED THAT THE HIGHER AREA WAS WARMER THAN THE LOWER AREA DURING THE WINTER SEASON. THE SOIL PROFILE AT THE BOTTOM OF THE KARAGAMA VOLCANIC CRATER SUGGESTS THAT THIS AREA IS UNDER WET AND COLD ENVIRONMENT. THERE ARE MANY NATURALLY-DESTRUCTED SITES AROUND THE CRATER AND SANDS AND GRAVELS ARE CONTINUOUSLY SUPPLIED TO THE BOTTOM OF THE CRATER. THESE ENVIRONMENTAL CONDITIONS MAY CAUSE THE UNIQUE PATTERN OF THE VEGETATION IN THE CRATER.

THERE ARE SOME SITES WITH STRUCTURED SOILS IN AND AROUND THE KARAGAMA CRATER AND ENORMOUS NUMBER OF AN ALPINE PLANT,*DICENTRA PEREGRINA*, ARE PLANTED THERE. THE GEOGRAPHICAL SURVEY REVEALED THAT THIS PLANT WAS REMOVED FROM THE SAND BELT OF THE STRUCTURED SOILS BY SOIL MOVEMENT CAUSED BY THE CREATION OF FROST COLUMNS DURING THE COLD SEASON.

INVESTIGATION OF RHIZOSPHERIC FUNGI SHOWED THAT MOST OF THE ALPINE PLANT SPECIES GROWING AT THE TOP OF THE MT. KUSATSU MOTOSHIRANE AND MT. KUSATSU SIRANE HAVE MICORRHIZAL SYMBIOSIS. THIS SUGGEST THAT THE MICORRHIZAL FUNGI PLAY AN IMPORTANT ROLE FOR ALPINE PLANT SURVIVAL IN THE VOLCANIC REGION.

FUNGAL DISTRIBUTION PATTERNS IN LITTERS OF *PINUS PUMILA* AND *ABIES VEITCHII*, ANIMAL DUNGS AND VOLCANIC ACID LAKES REVEALED THAT THE DECOMPOSITION SYSTEM IN THIS VOLCANIC REGION IS REGULATED BY THE COLD CLIMATE, BUT MAYBE GOOD ENOUGH FOR MATTER CYCLING WITHIN THIS ECOSYSTEM.

10. KEY WORDS:

(1) AIR TEMPERATURE	(2) ALPINE PLANTS	(3) FUNGAL DISTRIBUTION
(4) MICORRHIZAE	(5) STRUCTURED SOIL	(6) VOLCANIC CRATER
(7) VOLCANIC SOIL STRUCTURE	(8) VOLCANO	

(CONTINUE TO NEXT PAGE)

11. REFERENCES

AUTHORS, TITLE OF ARTICLES	JOUNAL, VOLUME-NUMBER, PAGES CONCERNED, YEAR
KURIHARA, Y., TOKUMASU, S. AND CHIEN, Y.-C. *COEMANSIA FURCATA* SP. NOV. AND ITS DISTRIBUTION IN JAPAN AND TAIWAN.	MYCOSCIENCE **41(6):** 579-583 (2000).
KASAI, K., USAMI, T., ISHIKAWA, S.-I., LEE, J. AND OIKAWA, T. RESPONSES OF ECTO-MYCORRHIZAL COLONIZATION AND MORPHOTYPE ASSEMBLAGE OF *QUERCUS MYRSINAEFOLIA* SEEDLINGS TO ELEVATED AIR TEMPERATURE AND ELEVATED ATMOSPHERIC CO_2.	MICROBES AND ENVIRONMENTS **15(4):** (IN PRESS) (2000) .
OHYA,S.,T.TAMURA AND J.AZUMA MICROBIAL BIOMASS AND ENZYME ACTIVITY OF SOILS IN AN URBAN AREA.	SOIL MICROORGANISMS **54:** 159-164 (2000).
ABE, P..J. AND ISHIKAWA, S.-I. MICORRHIZAL SYMBIOSYS IN COASTAL SAND-DUNE HERVACEOUS VEGETATION.	JAPANESE JOURNAL OF ECOLOGY **49:** 145-150 (1999). (IN JAPANESE WITH ENGLISH SUMMARY)