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Uredinales of the Tokara Islands¹⁾

By

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The region studied is the Tokara Islands. As it is shown in the map below, they lie between the Satsunan Islands and Amami-Oshima. Politically, they are a part of Kagoshima Prefecture and are called Jitto-son, Oshima-gun. The Tokara Islands are a group of islands scattered between N. 28° 45', E. 129° and N. 29° 55', E. 129° 55', where Kuchino-shima is located. It is about 204 km. south of Kagoshima port. The principal islands, from northeast, are Kuchino-shima, Nakano-shima, Gwaja-shima, Ko-gaja-shima, Suwanose-shima, Taira-shima, Akuseki-shima, Kodakara-shima, Takara-shima and Yokoate-shima which is not inhabited. Geographical and social situations of each of the islands are shown in Table 1.

Table 1. Geographical and social situations of Jitto-son

Islands	Location	Circumference (km)	Area (km ²)	Highest mountain	No. of houses	Population
Kuchino-shima	E. 129°55' N. 29°55'09"	15.28	13.30	675m	108	586
Nakano-shima	E. 129°55'01" N. 29°51'30"	28.04	27.55	1,030m	209	960
Gwaja-shima	E. 129°33'10" N. 29°54'00"	9.28	4.50		11	46
Taira-shima	E. 129°34'30" N. 29°42'00"	4.52	1.99		34	198
Suwanose-shima	E. 129°42'00" N. 29°36'00"	24.48	22.33	818m	18	93
Akuseki-shima	E. 129°39'00" N. 29°27'00"	8.76	7.04		36	181
Kodakara-shima		3.2	1.17		18	95
Takara-shima	E. 129°13'00" N. 29°08'00"	12.12	5.94		115	570

(According to Jitto-son Office Bulletin, 1954)

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The Tokara Islands, being a part of the inner chain of the Ryukyu Curve, consist of "young" volcanic rocks, that is, volcanic islands constituting a part of Kirishima Volcanic Chain. It stretches southwestward and runs through Yokoate-shima, Tori-shima, Theya-shima, Aguni-shima, Kume-shima and Senkaku Islands to Daiton Volcano which is located at northern part of Formosa.

These islands are classified into three groups according to the history of volcanic formation. The first group includes Suwanose-shima with On-take (818 m. above sea-level) and Nakano-shima with On-take (1030 m. above sea-level). These volcanoes are active at present and keep the typical form of a volcano. The second group such as Kuchino-shima is "middle-aged" volcano which has ceased the activities and has been weathered only to remain in calderas and others forms of dead volcanoes. The third group consists of Taira-shima, Kodakara-shima and Takara-shima. These islands have lost the features of a volcanic island, but only the accumulated volcanic products show that there have been volcanoes in these islands. To a certain extent, these islands differ from each other in formation and in the nature of rocks, but on the whole it is reported that most of them consist of compound pyroxen-andestitic lava, agglomerate and tuff, and form a stratified volcano. Therefore, the basal formation of these islands is assumed to be a wide stratum of aqueous rocks that are the constituents of the Satsunan islands and in Ryukyu Islands. Topographically, every one of them is generally hilly and surrounded by cliffs along its edge. Moreover, around these islands coral reefs are developed. Kodakara-shima and Takara-shima are particularly conspicuous in the coral reef formation.

The outline of the weather situations of this chain of islands is as follows. Since the islands are surrounded by the waters, the climate is considerably oceanic and is generally warm. The average temperature is about 20°C, August being the hottest month, and January the coldest. The lowest temperature recorded in this area is 4°C, but the average lowest temperature and the average temperature of the coldest month are 9.3°C and 12.1°C respectively. The annual rainfall is considerably high; it is about 3,000 mm. It seems to be due to the seasonal wind from northeast in winter and that from southwest in summer. Table 2 shows a comparison of temperatures of Kagoshima, Miyazaki, Tanega-shima, Nakano-shima, Nase and Naha. It is clear from the table that the distribution of temperatures is remarkably discontinuous, and the Osumi Straights and the Tokara ones are both climatic boundries.

Table 2. Comparison of temperatures of Kagoshima, Miyazaki, Tanegashima, Nakano-shima, Nase and Naha

Place	Temperature (C°)		
	Annual ave. temp.	Ave. temp. of the coldest month	Lowest temp.
Kagoshima City	16.5	7.4	- 3.7
Miyazaki City	16.5	7.5	- 3.0
Tanega-shima	19.0	10.2	1.5
Nakano-shima (Tokara)	20.0	12.1	4.0
Nase (Amami-Oshima)	20.8	14.2	3.1
Naha (Okinawa)	22.8	16.0	4.9

This isothermal line with the average temperature of 10°C of the coldest month, which has close ecological relation passes through the Osumi Straights, but the Tokara Straights is reasonably compared with the Osumi Straights in its ecological importance. The isothermal line with the average temperature of 20°C, which is the boundary line for Central Japan and South Japan, passes near the Tokara Straights and is close to the average northern limit of the trade-wind zone. Mr. Eiichiro Fukui proposed that the Tokara Straights is the primary climatic boundary and the Osumi Straights the secondary. These islands lie on the Shichito-sea which is famous for its furious waves and is very inconvenient in transportation. In the months of January and February the seasonal wind blows strongly from the northwest, and in March and April the weather is comparatively calm allowing safe voyage, though occasionally typhoons strike these islands. In the months of May, June and July,

Table 3. Climatological situation of Nakano-shima (1914-1951)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Ave. temp. (°C)	12.1	12.7	15.5	18.7	22.3	24.8	27.3	28.1	25.9	22.1	18.0	14.5	20.2
Ave. highest temp. (°C)	14.9	15.4	18.6	22.4	25.9	28.4	30.9	31.4	29.9	25.4	21.7	18.1	23.6
Ave. lowest temp. (°C)	9.3	10.1	12.4	15.0	18.8	21.1	23.6	24.8	21.9	18.7	14.4	11.0	16.7
Highest temp. (°C)	25.5	23.0	28.2	28.9	31.5	35.3	38.0	38.9	35.0	32.4	28.3	25.0	38.9
Lowest temp. (°C)	4.0	4.8	5.0	8.5	11.0	17.2	14.3	20.9	14.4	11.9	10.1	4.5	4.0
Rainy days (days)	17.6	19.0	14.8	14.6	18.0	20.5	17.3	15.6	15.4	10.2	12.1	19.5	184.8
Ave. rainfall (mm)	165.2	192.4	229.2	264.9	304.3	463.4	248.2	182.6	304.8	227.6	144.7	176.2	3132.1

(According to Nase Weather Station Bulletin, April 1954)

the strong winds blow from the south which make it very difficult for ships to sail in and out as the ports of these islands face the southwest. From this period on to August and September typhoons would pass over them causing rude waves. In October, November and December, wind usually comes from the west and northwest, and there are many fine days which are safe for voyage. For reference, the climatological information of Nakano-shima is shown in Table 3.

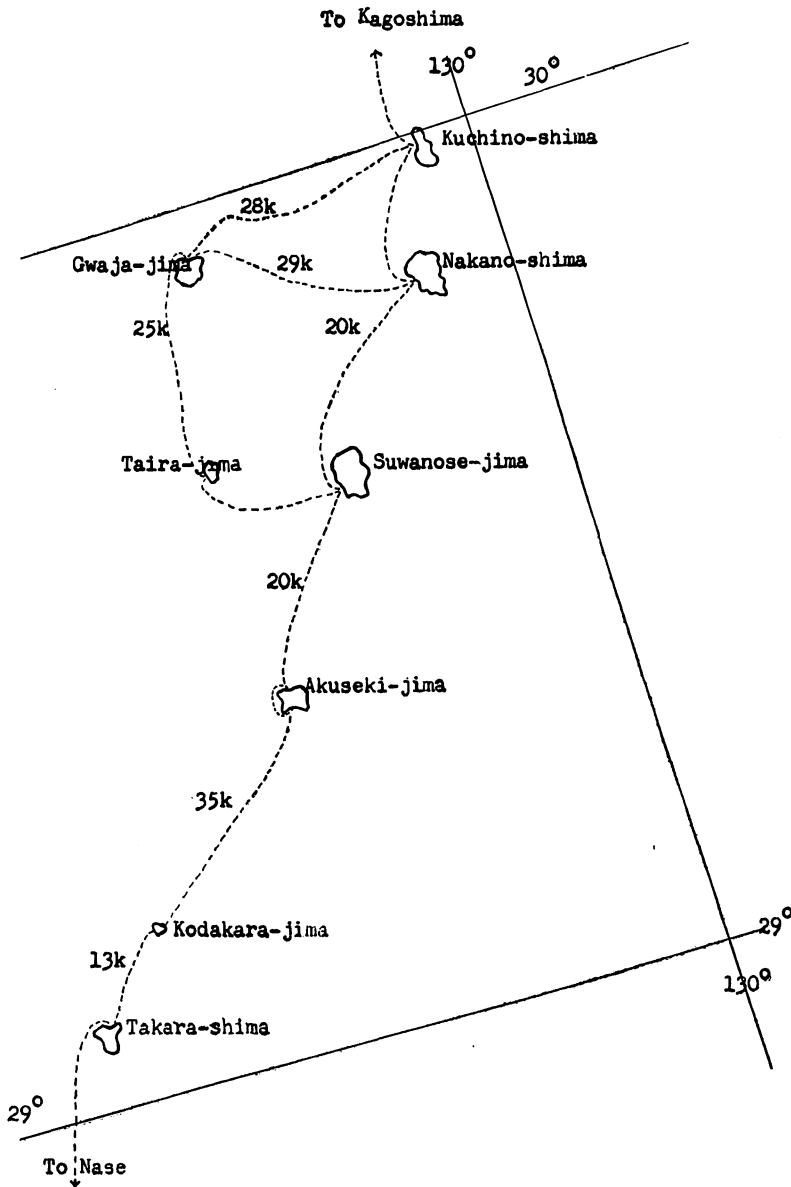
As shown in Table 3, the Tokara Islands are endowed with a favourable climate, but they lack in plain fields and rivers, and therefore, crops grown in the islands are not worth mentioning.

In summer of 1955, Shimabukuro and Niuro, two of the authors visited some of the islands to make collection of rust fungi, and they stayed there for about twenty days from the last part of July to the middle of August. The islands visited are Nakano-shima, Suwanose-shima, Akuseki-shima and Takara-shima. In December of the same year, Niuro visited Nakano-shima, Kodakara-shima and Takara-shima, where he stayed for about ten days to collect specimens of rust fungi.

The materials described in the present work are, besides collections made by the authors in 1955, some valuable specimens collected by Prof. T. Naito, preserved in Faculty of Agriculture, Kagoshima University. The number of specimens totals more than three hundreds, amongst which are included 85 species.

Table 4. Number of species of rust fungi found in the Tokara Islands

Families	Genera	Number of species					Total
		Nakano-shima	Suwanose-shima	Akuseki-shima	Kodakara-shima	Takara-shima	
Melampsoraceae	Uredinopsis	1					1
	Milesina	1				2	2
	Hyalossora	1					1
	Pucciniastrum	2				1	3
	Phakopsora	5	3	2	2	4	6
	Coleopucciniella					1	1
	Dasturella	1					1
	Coleosporium	7	1	1	1	4	8
Pucciniaceae	Pileolaria	1					1
	Kuehneola	1		1		2	2
	Hamaspora					1	1
	Phragmidium	3				1	3
	Nothoravenelia					1	1
	Uromyces	3	2		1	8	8
	Puccinia	27	5	7	2	18	35
Uredinales Imperfecti	Aecidium	4	2		6	6	7
	Uredo	3	1	1	3	3	4
Total		60	14	12	8	52	85



Text-fig. 1. A map of the Tokara Islands

As shown in Table 4, there are 17 genera and 85 species including 11 species of the two form-genera, *Aecidium* and *Uredo*, which were found in the Tokara Islands. Among them, there are 14 genera and 60 species from Nakano-shima, 6 genera and 14 species from Suwanose-shima, 5 genera and 12 species from Akuseki-shima, 4 genera and 8 species from Kodakara-shima, and 13 genera and 52 species from Takara-shima were found.

Enumeration of species

MELAMPSORACEAE

1. **Uredinopsis macrosperma** Magnus in Hedwigia, XLIII, p. 122, 1904.

Hab. II, (III). On *Pteridium aquilinum* Kühn var. *japonicum* Nakai (*Warabi*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-42).

2. **Milesina exigua** Faull in Jour. Arnold Arboretum, XII, p. 219, 1931.

Hab. II, (III). On *Ctenitis subglandulosa* (Hance) Ching (*Katsuno-inode*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-152).

3. **Milesina pteridicola** Hiratsuka, f. in Hiratsuka, f. & Yoshinaga in Mem. Tottori Agric. Coll. III, p. 256, 1935.

Hab. II, (III). On *Pteris dispar* Kunze (*Amakusa-shida*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-151; Dec. 22, 1955, Y. N., no. T-243).

II, III. On *Pteris Fauriei* Hieron. (*Shima-hachijyo-shida*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-319).

4. **Hyalopsora Polypodii** (Diet.) Magnus in Ber. Deutsch. Bot. Ges. XIX, p. 582, 1901.

Hab. II, (III). On *Diplazium oshimense* H. Ito (*Shike-shida*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-334).

5. **Pucciniastrum Actinidiae** Hiratsuka, f. in Mem. Tottori Agric. Coll. IV, p. 279, 1936; Jour. Jap. Bot. XXVII, p. 111, 1952.

Hab. II, (III). On *Actinidia rufa* Planch. (*Nashi-kadzura*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-274).

6. **Pucciniastrum Agrimoniae** (Diet.) Tranzschel in Script. Bot. Hort. Univ. Petropol. IV, p. 301, 1895.

Hab. II, (III). On *Agrimonia pilosa* Ledeb. var. *japonica* Nakai (*Kinmidzukiki*). Takara-shima (Aug. 13, 1955, S. S. & Y. N., no. T-147; Dec. 22, 1955, Y. N., no. T-223).

7. **Pucciniastrum Styracinum** Hiratsuka in Bot. Mag. Tokyo, XII, p. 32 & pl. II, figs. 7-13, 1898.

Hab. II, (II). On *Styrax japonica* Sieb. et Zucc. (*Ego-no-ki*). Nakano-shima (Dec. 25, 1955, Y. N., no. T-285).

8. **Phakopsora Ampelopsidis** Dietel et Sydow in Dietel in Hedwigia, XXXVII, p. 217, 1898.

Hab. II, III. On *Ampelopsis brevipedunculata* Trautv. et Mey. var. *Maximowiczii* Rehd. (*No-budo*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-46; Dec. 25, 1955, Y. N., no. T-277; April 18, 1935, T. N.). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-99). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-132). Takara-shima (Dec. 22, 1955, Y. N., no. T-245). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-269).

9. **Phakopsora Fici-erectae** Ito et Otani in Bot. & Zool. IX, p. 663 & text-fig. 2, 1941 (nom. seminud.); Ito & Murayama in Transact. Sapporo Nat. Hist. Soc. XVIII, p. 85, 1949.

Hab. II, (III). On *Ficus erecta* Thunb. (*Inu-biwa*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-41; Dec. 24, 1955, Y. N., no. T-289). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-101). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-123). Takara-shima (Aug. 9, 1955, S. S. & Y. N., no. T-154; Dec. 22, 1955, Y. N., no. T-240).

II, (III). On *Morus australis* Poir. (*Shima-guwa*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-293).

10. **Phakopsora formosana** Sydow in Ann. Myc. XII, p. 109, 1914.

Hab. II, III. On *Glochidion obovatum* Sieb. et Zucc. (*Kankono-ki*). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-106). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-180; Dec. 22, 1955, Y. N., no. T-224).

11. **Phakopsora Pachyrhizi** Sydow in Ann. Myc. XII, p. 108, 1914.

Hab. II, (III). On *Pueraria tonkinensis* Cagnep. (*Taiwan-kudzu*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-45; Dec. 25, 1955, Y. N., no. T-287). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-168; Dec. 22, 1955, Y. N., no. T-217). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-264).

12. **Phakopsora Artemisiae** Hiratsuka, f. in Jap. Jour. Bot. III, p. 298, 1927.

Hab. II, (III). On *Artemisia japonica* Thunb. (*Otoko-yomogi*). Nakano-shima (Dec. 25, 1955, Y. N., no. T-292).

13. **Phakopsora Malloti** Cummins in Mycologia, XLII, p. 783 & fig. 3, 1950.

Hab. II, (III). On *Mallotus japonicaus* Müll.-Arg. (*Akamegashiwa*). Nakano-shima (Dec. 25, 1955, Y. N., no. T-279).

14. **Coleopucciniella Idei** Hiratsuka, f. in Jour. Jap. Bot. XIII, p. 245, 1937.

Hab. III. On *Rhaphiolepis umbellata* Mak. (*Sharinbai*). Takara-shima (Dec. 22, 1955, Y. N., no. T-229).

15. **Dasturella divina** (Syd.) Mundkur et Kheswalla in Mycologia, XXXV, p. 202, 1943.

Hab. II, (III). On *Leleba vulgaris* Nakai (*Daisan-chiku*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-25).

16. **Coleosporium Bletiae** Dietel in Hedwigia, XXXVII, p. 216, 1898.

Hab. II, (III). On *Calanthe tripricata* Ames. (*Tsuru-ran*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-31; Dec. 24, 1955, Y. N., no. T-273).

17. **Coleosporium Campanulae** Léveillé in Ann. Sci. Nat. (III), VIII, p. 373, 1847.

Hab. II, (III). On *Adenophora triphylla* DC. var. *insularis* Kitam. (*Ryukyū-shajin*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-77; Dec. 25, 1955, Y. N., no. T-300).

18. **Coleosporium Clematidis-apiifoliae** Dietel in Bot. Jahrb. XXVIII, p. 287, 1900.

Hab. II, (III). On *Clematis Pierotti* Miq. (*Koba-no-botandzuru*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-47; Dec. 24, 1955, Y. N., no. T-311).

19. **Coleosporium Clerodendri** Dietel in Bot. Jahrb. XXVII, p. 566, 1899.

Hab. II, III. On *Clerodendron trichotomum* Thunb. (*Kusagi*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-32; Dec. 24, 1955, Y. N., no. T-282). Akuseki-shima (Aug. 7, 1955, S. S. & Y. N., no. T-119). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-150). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-266).

20. **Coleosporium Evodiae** Dietel in Ann. Myc. VII, p. 355, 1909.

Hab. II, (III). On *Evodia glauca* Miq. (*Hama-sendan, Shimakuroki*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-76; Dec. 25, 1955, Y. N., no. T-302). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-178; Dec. 22, 1955, Y. N., no. T-233).

21. **Coleosporium Paederiae** Dietel in Ann. Myc. VII, p. 355, 1909.

Hab. II, (III). On *Paederia chinensis* Hance. (*Yaitobana*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-8; Dec. 24, 1955, Y. N., no. T-286). Suwanose-shima (Aug. 6, 1955, S. S. & Y. N., no. T-89). Takara-shima (Aug. 13, 1955, S. S. & Y. N., no. T-146; Dec. 22, 1955, Y. N., no. T-213). Kodakara-shima (Dec. 26, 1955, Y. N., no. T-267).

22. **Coleosporium Perillae** Sydow in Hedwigia, XXXVIII, p. (141), 1899.

Hab. II, (III). On *Orthodon grosseserratum* Kudo (*Hime-jiso*). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-177). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-263).

23. **Coleosporium Xanthoxyli** Dietel et Sydow in Dietel in Hedwigia, XXXVII, p. 217, 1898.

Hab. II, III. On *Fagara ailanthoides* Engl. (*Karasu-zansho*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-55; Dec. 24, 1955, Y. N., no. T-298).

PUCCINIACEAE

24. **Pileolaria Shiraiana** (Diet. et Syd.) Ito in Jour. Coll. Agric. Hokkaido Imp. Univ. XI, p. 273 & pl. IX, fig. 13, 1922.

Hab. II, III. On *Rhus succedanea* L. (*Haze-no-ki*). Nakano-shima (Dec. 26, 1955, Y. N., no. T-309).

25. **Kuehneola Callicarpae** Sydow in Sydow & Petrak in Ann. Myc. XXVI, p. 420, 1928.

Hab. (O), II, III. On *Callicarpa japonica* Thunb. var. *luxurians* Rehd. (*O-murasakishikibu*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-68; Dec. 24, 1955, Y. N., no. T-290). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-126). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-153; Dec. 22, 1955, Y. N., no. T-215).

26. **Kuehneola japonica** (Diet.) Dietel in Ann. Myc. X, p. 205, 1912.

Hab. III. On *Rosa Wichuraiana* Crep. (*Teriha-noibara*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-184).

27. **Hamaspora Rubi-Sieboldii** (Kawagoe) Dietel in Ann. Myc. XX, p. 293, 1922.

Hab. II, III. On *Rubus Sieboldii* Bl. (*Horoku-ichigo*). Takara-shima (Dec. 22, 1955, Y. N., no. T-216).

28. **Phragmidium griseum** Dietel in Bot. Jahrb. XXXII, p. 49, 1902.

Hab. II, (III). On *Rubus rosaefolius* Sm. var. *Maximowiczii* Focke (*Ryukyu-baraichigo*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-21).

29. **Phragmidium heterosporum** Dietel in Bot. Jahrb. XXXII, p. 626, 1903.

Hab. II, (III). On *Rubus ribisoideus* Matsum. (*Hachijyo-ichigo*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-5).

30. **Phragmidium pauciloculare** (Diet.) Sydow, Monogr. Ured. III, p. 138 & pl. VI, fig. 60, 1912.

Hab. II, (III). On *Rubus parvifolius* L. var. *triphyllus* Nakai (*Nawashiro-ichigo*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-34; Dec. 25, 1955, Y. N., no. T-288). Takara-shima (Dec. 22, 1955, Y. N., no. T-231).

31. **Nothoravenelia japonica** Dietel in Ann. Myc. VIII, p. 310, 1910.

Hab. II, III. On *Securinea suffruticosa* Rehd. (*Hitotsuba-hagi*). Takara-shima (Aug. 10, 1955, S. S. & Y. N., no. T-161).

32. **Uromyces amurensis** Komarov in Jaczewski, Komarov et Tranzschel, Fungi Ross. exsicc. nos. 157 & 158, 1899.

Hab. (O, I), II, III. On *Maackia Tashiroi* Mak. (*Shima-enjyu*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-185).

33. **Uromyces azukicola** S. Hirata in Ann. Phytopath. Soc. Japan, XVI, p. 18 & text-fig. 3, 1952.

Hab. (O, I), II, III. On *Phaseolus angularis* Wight. (*Adzuki*) (*cult.*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-164).

34. **Uromyces Commelinae** Cooke in Transact. Roy. Soc. Edinb. XXXI, p. 342, 1888.

Hab. II, (III). On *Commelina nudiflora* L. (*Shima-tsuyukusa*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-50; Dec. 24, 1955, Y. N., no. T-291). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-87). Takara-shima (Aug. 13, 1955, S. S. & Y. N., no. T-149).

II, (III). On *Polliia japonica* Thunb. (*Yabu-myoga*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-27).

35. **Uromyces Lespedezae-procumbentis** (Schw.) Curtis in Geol. Survey N. Car. III, p. 123, 1867.

Hab. (O, I), II, III. On *Lespedeza cuneata* G. Don (*Medo-hagi*). Takara-shima (Aug. 13, 1955, S. S. & Y. N., no. T-190; Dec. 22, 1955, Y. N., no. T-225).

36. **Uromyces Setariae-italicae** Yoshino in Bot. Mag. Tokyo, XX, p. 247, 1906.

Hab. II, (III). On *Setaria italica* Beauv. (*Awa*) (*cult.*). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-104).

II, (III). On *Setaria viridis* Beauv. var. *pachystachys* Mak. et Nem. (*Hama-enokoro*). Takara-shima (Dec. 22, 1955, Y. N., no. T-234).

37. **Uromyces tenuicutis** Mc Alpine, Rusts of Australia, p. 87 & pl. XVI, fig. 133, 1906.

Hab. II, (III). On *Sporobolus indicus* R. Br. (*Nezumino-o*). Takara-shima (Aug. 11, 1955, S. S. & Y. N., no. T-157; Dec. 22, 1955, Y. N., no. T-218). Nakano-shima (Dec. 24, 1955, Y. N., no. T-280).

38. **Uromyces Wedeliae** Hennings in Hedwigia, XLIII, p. 150, 1904.

Hab. II, III. On *Wedelia biflora* DC. (*Kidachi-hamaguruma*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-54). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-144). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-270).

39. **Uromyces yakushimensis** Hiratsuka, f. et Katsuki in Hiratsuka, f. in Mem. Facul. Agric. Tokyo Univ. Education, I, p. 53, 1952.

Hab. II, III. On *Trichosanthes bracteata* Voigt. (*O-karasuuri*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-187).

40. **Puccinia Absinthii** (Hedw. f.) De Candolle, Fl. Fr. VI, p. 56, 1815.

Hab. II, (III). On *Artemisia dubia* Wall. (*Yomogi*). Takara-shima (Dec. 22, 1955, Y. N., no. T-230). Nakano-shima (Dec. 25, 1955, Y. N., no. T-303).

41. **Puccinia aestivalis** Dietel in Bot. Jahrb. XXXIV, p. 585, 1905.

Hab. II, III. On *Microstegium nudum* A. Camus (*Sasagaya*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-18; Dec. 24, 1955, Y. N., no. T-313). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-169; Dec. 22, 1955, Y. N., no. T-253).

42. **Puccinia Agrostidis** Plowright in Gard. Chron. (III), VIII, p. 139, 1890.

Hab. II, (III). On *Agrostis Matsumurae* Hack. (*Nukabo*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-9).

43. ***Puccinia Arthraxonis-ciliaris*** Cummins in *Uredineana*, IV, p. 16 & fig. 9, 1953.

Hab. II, (III). On *Arthraxon hispidus* Mak. (*Kobunagusa*). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-173; Dec. 22, 1955, Y. N., no. T-226). Nakano-shima (Dec. 25, 1955, Y. N., no. T-307).

44. ***Puccinia breviculmis*** Dietel in *Ann. Myc.* V, p. 72, 1907.

Hab. II, (III). On *Carex leucochloa* Bunge (*Ao-suge*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-65; Dec. 25, 1955, Y. N., no. T-320).

II, (III). On *Carex leucochloa* var. *fili culmis* Kitagawa (*Ito-aosuge*). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-118). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-160).

45. ***Puccinia Caricis-Boottianae*** Hiratsuka, f. in Hiratsuka, f. & Shimabukuro in *Sci. Bull. Facul. Agric. Univ. Ryukyus*, I, p. 26, & Pl. II, fig. 5, 1954.

Hab. O, I. On *Farfugium japonicum* Kitamura (*Tsuwabuki*). Takara-shima (Dec. 22, 1955, Y. N., no. T-221). Nakano-shima (Dec. 25, 1955, Y. N., no. T-299).

II, III. On *Carex brunnea* Thunb. (*Kogome-suge*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-336).

46. ***Puccinia Caricis-japonicae*** Dietel in *Ann. Myc.* IV, p. 306, 1906.

Hab. II, III. On *Carex Doniana* Spreng. (*Shira-suge*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-48).

47. ***Puccinia Chrysanthemi*** Roze in *Bull. Soc. Myc. Fr.* XVII, p. 92, 1900.

Hab. II, (III). On *Chrysanthemum japonense* Nakai var. *crassum* Kitamura (*Oshima-nojigiku*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-72).

48. ***Puccinia citrina*** Sydow, *Monogr. Ured.* I, p. 634 & pl. XXXVI, fig. 483, 1903.

Hab. II, III. On *Heterosmilax japonica* Kunth. (*Karasukiba-sankirai*). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-176; Dec. 22, 1955, Y. N., no. T-248).

49. ***Puccinia congesta*** Berkeley et Broome in *Jour. Linn. Soc.* XI, p. 91, 1871.

Hab. III. On *Ampelygonum umbellatum* Masamune (*Tsurusoba*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-13; Dec. 24, 1955, Y. N., no. T-281; Aug. 19, 1933, T. N.). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-100). Akuseki-shima (Aug. 7, 1955, S. S. & Y. N., no. T-127).

50. **Puccinia Crepidis-integrae** Hiratsuka, f. in Mem. Facul. Agric. Tokyo Univ. Education, I, p. 61, 1952; Jour. Jap. Bot. XXVII, p. 113, 1952.

Hab. (O, I), II, III. On *Crepidiastrum lanceolatum* Nakai f. *pinnatilobum* Nakai (*Hama-naren*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-326).

51. **Puccinia Crepidis-japonicae** Dietel in Ann. Myc. VI, p. 226, 1908.

Hab. II, III. On *Youngia japonica* DC. (*Oni-tabirako*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-70; Dec. 24, 1955, Y. N., no. T-283). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-129). Takara-shima (Dec. 22, 1955, Y. N., no. T-241).

52. **Puccinia Cynodontis** Lacroix in Desm., Pl. Crypt. II, no. 655, 1859.

Hab. II, III. On *Cynodon Dactylon* Pers. (*Gyogi-shiba*). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-235).

53. **Puccinia flavipes** Sydow in Sydow & Butler in Ann. Myc. V, p. 497, 1907.

Hab. II, III. On *Fimbristylis annua* Roem. et Schult. (*Tentsuki*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-66).

II, (III). On *Fimbristylis subbispicata* Nees et Meyen. (*Yama-i*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-62).

54. **Puccinia Hemerocallidis** Thümen in Bull. Soc. Imp. Nat. Moscou, LV, p. 81, 1880.

Hab. II, III. On *Hemerocallis disticha* Donn. (*No-kwanzo*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-71; Dec. 26, 1955, Y. N., no. T-308).

55. **Puccinia Kusanoi** Dietel in Bot. Jahrb. XXVII, p. 569 & pl. VII, figs. 14 & 15, 1899.

Hab. II, (III). On *Pleioblastus Hindsii* Nakai (*Kanzan-chiku*). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-95). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-130). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-159; Dec. 22, 1955, Y. N., no. T-236).

56. **Puccinia Lactucae-debilis** Dietel in Ann. Myc. VI, p. 225, 1908.

Hab. (O, I), II, (III). On *Ixeris japonica* Nakai (*Jishibari*). Nakano-shima (Dec. 24, 1955, Y. N., no. T-325).

57. **Puccinia Lactucae-repentis** Miyabe et T. Miyake ex Sydow in Ann. Myc. XI, p. 96, 1913.

Hab. O, I, (III). On *Ixeris repens* A. Gray (*Hama-nigana*). Takara-shima (Aug. 12, 1955, S. S. & Y. N., no. T-145).

58. **Puccinia levigata** (Syd. et Butl.) Hiratsuka, f. in Hiratsuka, f. & Yoshinaga in Mem. Tottori Agric. Coll. III, p. 315, 1935.

Hab. II, (III). On *Oplismenus compositus* Beauv. (*Edauchi-chijimizasa*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-24; Dec. 28, 1955, Y. N., no. T-338).

59. **Puccinia levis** (Sacc. et Bizz.) Magnus in Ber. Deutsch. Bot. Ges. IX, p. 190 & pl. IX, figs. 28-37, 1891.

Hab. II, (III). On *Syntherisma sanguinalis* Dulac. var. *ciliaris* Honda (*Mehijiwa*). Takara-shima (Aug. 13, 1955, S. S. & Y. N., no. T-141).

II, (III). On *Syntherisma sanguinalis* var. *evalvula* Honda (*Chimoru-mehijiwa*). Kodakara-shima (Dec. 23, 1955, Y. N., no. T-271).

60. **Puccinia Miscanthi** Miura, Flora of Manchuria & E. Mongolia, III, p. 302 & pl. IV, fig. B, 1928.

Hab. II, II. On *Miscanthus sinensis* Anders. (*Susuki*). Takara-shima (Dec. 22, 1955, Y. N., no. T-249).

II, (III). On *Miscanthus sinensis* var. *condensatus* Mak. (*Hachijyo-susuki*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-58). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-97). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-120).

61. **Puccinia Oenanthis-stoloniferae** S. Ito ex Tranzschel, Consp. Ured. URSS, p. 299, 1939.

Hab. II, (III). On *Oenanthe javanica* DC. (*Seri*). Takara-shima (Aug. 12, 1955, S. S. & Y. N., no. T-140). Nakano-shima (Dec. 24, 1955, Y. N., no. T-276).

62. **Puccinia Patriniae** Hennings in Bot. Jahrb. XXVIII, p. 261, 1900.

Hab. III. On *Patrinia villosa* Juss. (*Otokoheshi*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-51; Dec. 24, 1955, Y. N., no. T-301).

63. **Puccinia Phellopteri** Sydow, Monogr. Ured. I, p. 406, 1903.
Hab. II, III. On *Glehnia littoralis* Fr. Schm. (*Hama-bofu*).
Takara-shima (Aug. 10, 1955, S. S. & Y. N., no. T-189; Dec. 21, 1955,
Y. N., no. T-232).

64. **Puccinia philippinensis** Sydow in Philippine Jour. Sci. VIII,
no. 4, sect. C, Bot. p. 266, 1913.

Hab. II, (III). On *Cyperus polystachyos* Rottr. (*Igagayatsuri*).
Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-20).

65. **Puccinia Phyllostachydis** Kusano in Bull. Coll. Agric. Tokyo
Imp. Univ. VIII, p. 2 & pl. VI, figs. 1, 2, 10 & 11, 1908.

Hab. II, (III). On *Sinoarundinaria aurea* Honda (*Hotei-chiku*).
Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-170).

II, (III). On *Sinoarundinaria reticulata* Ohwi (*Ma-dake*).
Nakano-shima (Dec. 26, 1955, Y. N., no. T-305).

66. **Puccinia polliniicola** Sydow in Sydow & Petrak in Ann.
Myc. XXIX, p. 156, 1931.

Hab. II, (III). On *Microstegium vimineum* A. Camus var.
imberbe Honda (*Ashiboso*). Nakanoshima (Aug. 3, 1955, S. S. & Y.
N., no. T-56).

67. **Puccinia Polygoni-amphibii** Persoon, Syn. Meth. Fung. p.
227, 1801.

Hab. II, (III). On *Reynoutria japonica* Houtt. var. *typica* Ohki
(*Itadori*). Suwanose-shima (Aug. 4, 1955, Y. N. & S. S., no. T-107).

68. **Puccinia purpurea** Cooke in Grevillea, V, p. 15, 1876.

Hab. II, III. On *Sorghum bicolor* Moench. (*Morokoshi*) (*cult.*).
Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-33). Takara-
shima (Dec. 21, 1955, Y. N., no. T-239).

II, III. On *Andropogon citratus* DC. (*Remon-gurasu*). Takara-
shima (Aug. 11, 1955, S. S. & Y. N., no. T-156; Dec. 22, 1955, Y.
N., no. T-246).

69. **Puccinia rufipes** Dietel in Bot. Jahrb. XXXII, p. 48, 1902.

Hab. II, (III). On *Imperata cylindrica* Beauv. var. *Koenigii*
Durand et Schinz (*Chigaya*). Nakano-shima (Aug. 1, 1955, S. S. &
Y. N., no. T-14; Dec. 25, 1955, Y. N., no. T-295). Suwanose-shima
(Aug. 4, 1955, Y. N., no. T-98). Takara-shima (Aug. 7, 1955, S. S.
& Y. N., no. T-166).

70. **Puccinia Scleriae** (Paz.) Arthur in Mycologia, IX, p. 75,
1917.

Hab. II, III. On *Scleria Doederleiniana* Bocklr. (*O-shinju-gaya*). Akuseki-shima (Aug. 7, 1955, S. S. & Y. N., no. T-124). Takara-shima (Dec. 22, 1955, Y. N., no. T-228).

71. **Puccinia Smilacis-Sieboldii** Hiratsuka, f. in Bot. Mag. Tokyo, LVI, p. 377, 1942.

Hab. II, III. On *Smilax China* L. (*Sarutori-ibara*). Takara-shima (Dec. 22, 1955, Y. N., no. T-255). Nakano-shima (Dec. 24, 1955, Y. N., no. T-316).

72. **Puccinia Violae** De Candolle, Fl. Fr. VI, p. 62, 1815.

Hab. (O, I) II, III. On *Viola coreana* H. Boiss. (*Ko-tachitsubosumire*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-64; Dec. 25, 1955, Y. N., no. T-297; April 17, 1935, T. N.).

73. **Puccinia Wattiana** Barclay in Jour. Asiatic Soc. Bengal, LIX, pt. 2, p. 109, 1890.

Hab. III. On *Clematis Meyeniana* Walp. (*Yanbaru-senninso*). Nakano-shima (Aug. 1, 1955, S. S. & Y. N., no. T-17; Dec. 24, 1955, Y. N., no. T-317).

74. **Puccinia Zoysiae** Dietel in Bot. Jahrb. XXXII, p. 48, 1902.

Hab. (O), I. On *Paederia chinensis* Hance. (*Yaitobana*). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-131). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-211). Nakano-shima (Dec. 24, 1955, Y. N., no. T-286).

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75. **Aecidium Clerodendri** Hennings in Bot. Jahrb. XV, p. 6, 1892.

Hab. On *Clerodendron trichotomum* Thunb. (*Kusagi*). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-96). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-212; Dec. 22, 1955, Y. N., no. T-247).

76. **Aecidium Elaeagni** Dietel in Hedwigia, XXXVII, p. 212, 1898.

Hab. On *Elaeagnus Thunbergii* Serb. (*Taiwan-akigumi*). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-174).

77. **Aecidium Machili** Hennings in Hedwigia, XLI, p. 21, 1902.

Hab. On *Machilus Thunbergii* Sieb. et Zucc. (*Tabu-no-ki*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-75; Dec. 24, 1955, Y. N., no. T-294). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-90). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-171; Dec. 22, 1955, Y. N., no. T-214).

78. **Accidium minoense** Sydow in Ann. Myc. XIII, p. 36, 1915.
Hab. On *Elaeagnus macrophylla* Thunb. (*Maruba-gumi*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-44).

79. **Accidium Mori** Barclay in Jour. Asiatic Soc. Bengal, LX, pt. 2, p. 226, 1891.

Hab. On *Morus australis* Poir. (*Shima-guwa*). Takara-shima (Dec. 22, 1955, Y. N., no. T-237).

On *Morus bombycis* Koidz. (*Yama-guwa*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-67).

80. **Accidium Rraphiolepidis** Sydow in Ann. Myc. XX, p. 61, 1922.

Hab. On *Rraphiolepis umbellata* Mak. (*Sharinbai*). Takara-shima (Dec. 22, 1955, Y. N., no. T-229).

81. **Accidium Zanthoxyli-schinifolii** Dietel in Bot. Jahrb. XXXIV, p. 589, 1905.

Hab. On *Fagara mantchurica* Honda (*Inu-zansho*). Nakano-shima (July 31, 1955, S. S. & Y. N., no. T-53; Dec. 26, 1955, Y. N., no. T-306). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-191; Dec. 22, 1955, Y. N., no. T-242).

82. **Uredo Alocasiae** Sydow, Monogr. Ured. IV, p. 521, 1924.

Hab. On *Alocasia macrorrhiza* Schott. (*Kuwadzu-imo*). Nakano-shima (Aug. 2, 1955, S. S. & Y. N., no. T-2; Dec. 25, 1955, Y. N., no. T-304). Akuseki-shima (Aug. 6, 1955, S. S. & Y. N., no. T-117).

83. **Uredo Dianellae** Dietel in Hedwigia, XXXVII, p. 213, 1898.

Hab. On *Dianella ensifolia* Red. (*Kikyoran*). Nakano-shima (Aug. 3, 1955, S. S. & Y. N., no. T-38). Suwanose-shima (Aug. 4, 1955, S. S. & Y. N., no. T-105). Takara-shima (Aug. 7, 1955, S. S. & Y. N., no. T-182).

84. **Uredo paspalina** Sydow in Ann. Myc. XV, p. 177, 1916.

Hab. On *Paspalum scrobiculatum* L. var. *orbiculare* Hack. (*Suzume-no-kobie*). Takara-shima (Dec. 22, 1955, Y. N., no. T-256). Nakano-shima (Dec. 24, 1955, no. T-331).

85. **Uredo polygalaecola** Hiratsuka, f. in Bot. Mag. Tokyo, LVI, p. 379, 1942.

Hab. On *Polygala japonica* Houtt. (*Hime-hagi*). Takara-shima (Aug. 8, 1955, S. S. & Y. N., no. T-155).

Summary

1. The Tokara Islands consist of Kuchino-shima, Nakano-shima, Gwaja-shima, Kogwaja-shima, Taira-shima, Suwanose-shima, Akuseki-shima, Kodakara-shima, Takara-shima and Yokoate-shima. They are scattered between N. 28°45', E. 129° and N. 29°55', E. 129°55'.

2. In the Tokara Islands, there are 85 species of rust fungi belonging to 17 genera have been found. Among them, there are 14 genera and 60 species from Nakano-shima, 6 genera and 14 species from Suwanose-shima 5 genera and 12 species from Akuseki-shima, 4 genera and 8 species from Kodakara-shima, and 13 genera and 52 species from Takara-shima were found.

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トカラ列島産銹菌類に関する研究 (摘要)

平塚直秀・島袋俊一・新納義馬

トカラ列島は、琉球列島の北部に位置し、中之島、諏訪之瀬島、悪石島、宝島、小宝島などから成っており、鹿児島県大島郡十島村に属している。

島袋および新納は、1955年7月下旬から約20日間、中之島、諏訪之瀬島、悪石島および宝島において、さらに、新納は同年12月下旬、約10日間、中之島、小宝島および宝島において、それぞれ銹菌類の採集調査を行った。

本報文は、これらの島袋および新納の採集品（約300個）と内藤喬氏の採集にかかる鹿児島大学農学部所蔵の数個の標品にもとずいて、トカラ列島産の銹菌類を明かにしたものである。本報文において同列島産として列挙せる銹菌類は、層生銹菌科8属23種、柄生銹菌科17属51種および不完全銹菌類2属11種、計17属85種である。これら銹菌類を各島別にわけると、中之島において14属60種、諏訪之瀬島において6属14種、悪石島において5属12種、小宝島において4属8種、宝島において13属52種採集されている。