Mem. Fac. Fish. Kagoshima Univ.,
Vol. 73, pp. 9~13 (2024)

2023/2024 Annual Cruise Report of the *T/V Nansei-maru*

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Keywords: oceanographic observation, Kagoshima Bay

Abstract

To facilitate the effective use of T/V Nansei-maru, we will report on the annual activities of the vessel from April 2023 to March 2024. Seventy-eight (78) cruises were conducted by *T/V Nansei-maru*. The total number of cruise days was 144 days (126 days of training voyage, 3 days of Freshman seminar, 6 days of typhoon evacuation voyage, and 9 days of regular inspection) and the number of participants was 735 persons.

Introduction

T/V Nansei-maru was constructed in 2002 for the purpose of conducting practical training and observations of navigation, fishing vessel operation, fisheries, marine environment observations, and resource biology surveys. *T/V Nansei-maru* is based at the Ogawa Pier in Kagoshima Port. Its activities are conducted in areas that cover Kagoshima Bay, the Satsuma-Osumi Peninsula coasts, and the archipelagic waters in Kagoshima Prefecture, including Tanegashima, Yakushima, Tokara Islands, and the Koshiki Islands.

Specifications of the main shipboard instruments

This section provides general information on specifications of the main shipboard instruments employed during oceanographic observations and sample collections.

A Conductivity-Temperature-Depth Profiler System with a 12-position Carousel Multiple Sampler (CTD-CMS) is employed for hydrographic observations using sensors for conductivity, temperature, pressure (SBE 19plus: Sea-Bird Electronics, Inc.) and altimeter (Benthos PSA-916D: Teledyne Benthos, Inc.). Niskin bottles (2.5L) are attached to the CMS for collecting depth-stratified water samples.

For monitoring bathymetry and underwater substrates, *T/V Nansei-maru* has two different sonar instruments, first an Acoustic Doppler Current Profiler (Ocean Surveyor ADCP: Teledyne-RD Instruments, Inc.) and second a Scientific Echo Sounder (KFC3000: KAIJO). Available working frequencies are 75 kHz for the Acoustic Doppler Current Profiler (ADCP) and 38 and 120 kHz for the Scientific Echo Sounder (SES). ADCP and SES are used for measuring water current velocities over a certain depth range, and for monitoring bathymetry and underwater substrate classification, respectively.

A North Pacific Standard (NORPAC) net is used for collecting zooplankton samples. The mouth diameter is 0.45 m, and its mesh openings are 0.1 mm. A flowmeter (Rigo Co., Ltd.) is mounted in the mouth of the frame of the net to register the volume of water that has passed through it.

An Ocean Research Institute (ORI) net is employed for collecting zooplankton and fish larvae samples. The mouth diameter is 0.45 m, and its mesh openings are 0.335 mm. A flowmeter (Rigo Co., Ltd.) is also mounted for the same purpose.

Core, Dredge and Grab samplers are used for collecting bottom mud and benthic organisms. The Core sampler is a G.S. type Core sampler (ASYURA) (Rigo Co., Ltd.). The Grab sampler is a Smith-Mcintyre bottom sampler (Rigo Co., Ltd.). The Grab and Core samplers are deployed from the port-side of the vessel located on the working deck. A Niino-type Dredge sampler (Rigo Co., Ltd.) is also employed, which is obliquely towed from the afterdeck.

A Larva Catch (LC) net is a large-scale fishing gear that can

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be used in the permitted water areas. Instead of otter boards (expansion boards) at the mouth of the net, it is equipped with parakites (kites) that are used to widen the mouth of the net through its resistance during trawling. The ramp door on the stern deck of the ship is opened to deploy this trawl net.

Overview of cruises

T/V Nansei-maru conducted 78 cruises from April 2023 to March 2024 (Table 1). The Total number of the cruise days was 144 days and the number of participants was 735 persons. In the fiscal year 2023, *T/V Nansei-maru* navigated from Kagoshima Bay to the vicinity of Kodakara Island, one of the Tokara Islands (Fig.1). Other faculties and universities included in the cruises are listed as follows:

- Graduate School of Science and Engineering, Kagoshima University
- Faculty of Science, Kagoshima University
- Faculty of Engineering, Kagoshima University
- The University of Tokyo
- Tokyo University of Marine Science and Technology
- Hokkaido University
- Kochi University
- Osaka Metropolitan University
- Prefectural University of Kumamoto
- Nihon University

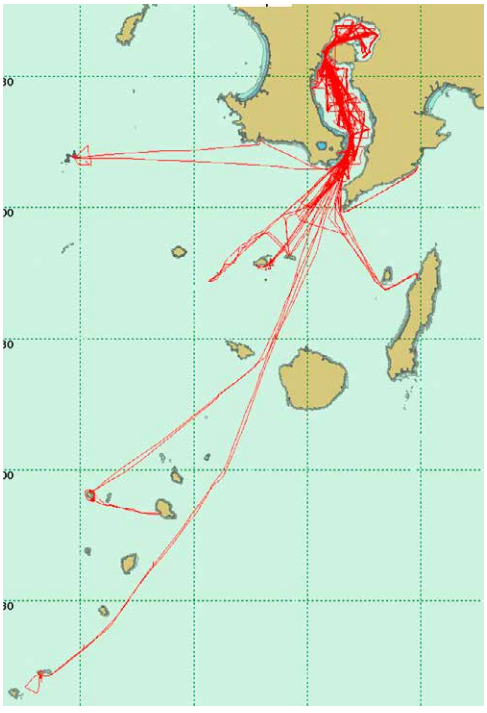

Fig. 1. Cruise tracks of *T/V Nansei-maru* during April 2023 to March 2024. Process and create electronic navigational charts (newpec) using the Japan Hydrographic Association's data.

Lists of publications

This section provides information on published articles relating to the observations carried out using T/V Nansei-maru in the period from April 2023 to March 2024.

Terada, R., A. Shindo, H. Moriyama, N. Shimboku, G. N. Nishihara (2023). The response of photosynthesis to temperature and irradiance in a green alga, *Ryuguphycus kuaweuweu* (Ulvales) reveals adaptation to a subtidal environment in the northern Ryukyu Islands. Algal Research, **74**: 103189,

Kobari, T., H. Nakatani, S. Goto, S. Tsuda, F. Makino, T. Azuma, T. Komorita, M. Ichinomiya, M. Kodama, G. Kume (2023). Prey sources of juvenile yellowtail *Seriola quinqueradiata* in the Satsunan area, southern Kyushu, Japan. Bull. Jpn. Soc. Fish. Oceanogr, **87** (4) :209–217.

Kume, G., K. Nakaya, T. Takeda, M. Ichinomiya, T. Komorita, A. Habano, F. Makino, M. Kodama, T. Kobari (2023). Distribution and growth rates of Japanese jack mackerel *Trachurus japonicus* larvae relative to oceanographic conditions in the northern Satsunan area, southern Japan. Plankton and Benthos Research, **18** (3) :148–159.

Uyeno, D., H. Tosuji (2023). Two new species of the genus Anilocra Leach, 1818 (Isopoda: Cymothoidae) parasitic on reef fishes from the western Pacific. Parasitology International, **95**: 102752–102752.

Tomiyasu, T., H. Matsuki, M. Oda, H. Kodamatani, R. Kanzaki, T. Kobari (2023). Impact of mercury discharged from submarine volcano on inner bay ecosystems. Chemosphere, **339**: 139748.

Tomiyasu, T., C. Nozoe, W. L. G. Ruiz, H. Kodamatani, R. Kanzaki (2023). Distribution of selenium and mercury concentrations in sediments of Kagoshima Bay: can submarine volcanic activity affect the distribution of selenium in sediments? Environmental Earth Sciences, **82** (20): 480.

Ishihara, S., B. C. Russell, H. Motomura (2023). Reinstatement and redescription of the monocle bream *Scolopsis regina* Whitley 1937 (Perciformes: Nemipteridae). Ichthyological Research, **71** (3): 366–377.

Dewa, Y., S. Tashiro, H. Motomura (2023). A new species of the genus *Enneapterygius* (Perciformes: Tripterygiidae) from Japan and the Philippines, with a synopsis and synonymy of related species. Zootaxa, **5374** (3): 333–

Table 1. Cruise information on *T/V Nansei-maru* during April 2023 to March 2024.

Cruise ID	Period			Number of persons			Major objectives
	Start	End	Days	SC/PR*	ST*	OP*	
NS23- 1	Apr 02	Apr 07	6	2	9		Hydrographic observation and Biological sample collection
NS23- 2	Apr 10	Apr 12	3	1	1	6	Hydrographic observation and Biological sample collection
NS23- 3	Apr 15	Apr 15	1		16		Freshman seminar
NS23- 4	Apr 16	Apr 16	1		16		Freshman seminar
NS23- 5	Apr 17	Apr 17	1	1	6		Fishing gear operation and Resource Survey
NS23- 6	Apr 18	Apr 18	1	1	4		Hydrographic observation
NS23- 7	Apr 20	Apr 20	1		3	11	Hydrographic observation and Biological sample collection
NS23- 8	Apr 21	Apr 21	1	2	6	1	Fishing gear operation and Resource Survey
NS23- 9	Apr 22	Apr 22	1		15		Freshman seminar
NS23- 10	May 16	May 16	1	1	7		Hydrographic observation
NS23- 11	May 17	May 18	2	1	4		Hydrographic observation
NS23- 12	May 19	May 22	4	1	8	3	Biological sample collection
NS23- 13	May 26	May 26	1	2	3	1	Fishing gear operation and Resource Survey
NS23- 14	Jun 09	Jun 11	3	1	3	5	Hydrographic observation and Biological sample collection
NS23- 15	Jun 13	Jun 13	1	1	10		Hydrographic observation
NS23- 16	Jun 15	Jun 15	1		1	9	Hydrographic observation and Biological sample collection
NS23- 17	Jun 16	Jun 16	1	1	5	1	Fishing gear operation and Resource Survey
NS23- 18	Jun 21	Jun 21	1	1	2		Equipment underwater test
NS23- 19	Jun 24	Jun 26	3	1	8		Biological sample collection
NS23- 20	Jun 28	Jun 28	1		3	9	Underwater equipment recovery
NS23- 21	Jul 02	Jul 04	3	1	8	7	Biological sample collection
NS23- 22	Jul 05	Jul 05	1	1	6	6	Hydrographic observation
NS23- 23	Jul 10	Jul 11	2	1	9		Biological sample collection
NS23- 24	Jul 13	Jul 14	2	2	8	1	Hydrographic observation and Biological sample collection
	Jul 14	Jul 15	2	2	8	1	Hydrographic observation and Biological sample collection
NS23- 25	Jul 20	Jul 20	1	1	4		Fishing gear operation and Resource Survey
NS23- 26	Jul 21	Jul 21	1	2	5		Fishing gear operation and Resource Survey
NS23- 27	Jul 23	Jul 23	1	2	5	2	Open to the public
NS23- 28	Aug 02	Aug 02	1		7	1	Hydrographic observation
NS23- 29	Aug 03	Aug 04	2	2	6		Hydrographic observation and Biological sample collection
NS23- 30	Aug 05	Aug 10	6		0		Typhoon evacuation
NS23- 31	Aug 18	Aug 18	1	1	5		Fishing gear operation and Resource Survey
NS23- 32	Aug 21	Aug 22	2	1	1		Equipment test
NS23- 33	Aug 23	Aug 23	1		3	8	Hydrographic observation and Biological sample collection
NS23- 34	Aug 28	Aug 29	2	1	2		Hydrographic observation
NS23- 35	Aug 30	Aug 31	2	2	5		Hydrographic observation and Biological sample collection
NS23- 36	Sep 06	Sep 06	1	1	8		Hydrographic observation
NS23- 37	Sep 08	Sep 08	1	1	8	2	Fishing gear operation
NS23- 38	Sep 11	Sep 13	3	1	1	10	Hydrographic observation and Biological sample collection
NS23- 39	Sep 15	Sep 15	1	1	4		Fishing gear operation and Resource Survey
NS23- 40	Sep 17	Sep 20	4	1	2	6	Hydrographic observation
NS23- 41	Oct 05	Oct 05	1		4		Hydrographic observation
NS23- 42	Oct 07	Oct 08	2	1	9		Hydrographic observation
NS23- 43	Oct 10	Oct 10	1		12		Hydrographic observation and Biological sample collection
NS23- 44	Oct 16	Oct 17	2	2	13		Hydrographic observation
NS23- 45	Oct 19	Oct 19	1	1	8		Fishing gear operation and Resource Survey
NS23- 46	Oct 20	Oct 20	1	1	8		Fishing gear operation and Resource Survey
NS23- 47	Oct 25	Oct 25	1	1	4	6	Ship Maneuvering Training
NS23- 48	Oct 27	Oct 30	4	1	8	2	Biological sample collection
NS23- 49	Nov 01	Nov 01	1	1	9	4	Hydrographic observation
NS23- 50	Nov 16	Nov 16	1	2	12		Hydrographic observation
NS23- 51	Nov 17	Nov 17	1	2	8		Fishing gear operation and Resource Survey
NS23- 52	Nov 27	Nov 28	2	1	3		Hydrographic observation
NS23- 53	Nov 29	Nov 30	2	1	3	5	Hydrographic observation and Biological sample collection
NS23- 54	Dec 01	Dec 01	1		1	9	Hydrographic observation and Biological sample collection
NS23- 55	Dec 06	Dec 06	1		8		Hydrographic observation
NS23- 56	Dec 08	Dec 08	1	1	4	7	Hydrographic observation and Biological sample collection
	Dec 09	Dec 09	1	1	4	11	Hydrographic observation and Biological sample collection
	Dec 10	Dec 10	1	1	5	8	Hydrographic observation and Biological sample collection
NS23- 57	Dec 14	Dec 15	2	2	9	2	Hydrographic observation and Biological sample collection
NS23- 58	Dec 21	Dec 22	2	1	2	3	Equipment underwater test
NS23- 59	Dec 23	Dec 23	1	2	7		Fishing gear operation and Resource Survey
NS23- 60	Jan 12	Jan 12	1	1	3		Ship Maneuvering Training
NS23- 61	Jan 15	Jan 15	1		0		Trial run
NS23- 62	Jan 16	Jan 16	1	1	2		Hydrographic observation
NS23- 63	Jan 17	Jan 17	1	1	9		Ship Maneuvering Training
NS23- 64	Jan 22	Jan 22	1	1	8		Fishing gear operation and Resource Survey
NS23- 65	Jan 24	Jan 24	1		6		Hydrographic observation
NS23- 66	Jan 26	Jan 26	1	2	7		Fishing gear operation and Resource Survey
NS23- 67	Feb 12	Feb 12	1	1	2		Ship Maneuvering Training
NS23- 68	Feb 13	Feb 14	2	1	3		Hydrographic observation
NS23- 69	Feb 18	Feb 23	6	2	8	4	Hydrographic observation and Biological sample collection
NS23- 70	Feb 26	Feb 26	1	2	7	2	Fishing gear operation and Resource Survey
NS23- 71	Feb 27	Feb 27	1	1	7		Hydrographic observation
NS23- 72	Feb 28	Feb 28	1		2	13	Hydrographic observation and Biological sample collection
NS23- 73	Mar 04	Mar 04	1		3	9	Underwater equipment installation
NS23- 74	Mar 14	Mar 14	1	1	4	1	Hydrographic observation
NS23- 75	Mar 18	Mar 19	2		2	3	Ship Maneuvering Training
NS23- 76	Mar 21	Mar 21	1	2	3		Biological sample collection
NS23- 77	Mar 22	Mar 22	1	2	6	2	Fishing gear operation and Resource Survey
NS23- 78	Mar 26	Mar 30	5	3	6	6	Hydrographic observation and Biological sample collection
	Nov 07	Nov 15	9				Periodic Ship Inspections

* SC/PR: Scientist/Professor, ST: Student, OP: Other person

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Matsumoto, T., N. Muto, H. Motomura (2023). *Neomerinthe ignea*, a new species of scorpionfish (Teleostei: Scorpaenidae) from the western Pacific Ocean, with a review of records of *N. erostris* (Alcock 1896). Ichthyological Research, **71**: 317–332.

Matsumoto, T., H. Motomura (2023). Taxonomic review of the *Neomerinthe bucephalus* species group (Teleostei: Scorpaenidae), with description of a new species from Vanuatu. Ichthyological Research, **71** (1): 13–39.

Yuki, D., J. Nakamura, T. Saito, N. Kashiwagi, H. Motomura (2023). Northernmost record of *Solegnathus* (*Solegnathus*) *lettiensis* (Syngnathidae) from Kamikoshiki-shima Island, Koshiki Islands, Kagoshima Prefecture, Japan. Japanese Journal of Ichthyology, **70** (2): 193–197.

Matsunuma, M., H. Motorura (2023). First Japanese records of *Engyprosopon mozambiquense and E. parvipectorale* (Bothidae) from Okinawa Island, Ryukyu Islands. Japanese Journal of Ichthyology, **70** (2): 167–177.

Koreeda, R., Y. Ogata, H. Motomura (2023). First records of six species of *Luciogobius* from Miyazaki Prefecture, southeastern Kyushu, Japan. Ichthy, Natural History of Fishes of Japan, **31**: 6–13.

Furuhashi, R., K. Fujiwara, H. Motomura (2023). First Kyushu record of Opistognathus flavidus (Opistognathidae) from Kagoshima Bay, Japan. Ichthy, Natural History of Fishes of Japan, 31: 19–23.

Hatanaka, Y., Y. Dewa, H. Motomura (2023). First specimen-based records of *Monocentris chrysadamas* (Monocentridae) from Japan. Ichthy, Natural History of Fishes of Japan, **31**: 24–30.

Hoshino, K., Y. Sakurai, H. Motomura (2023). First Japanese records of the Indo-Pacific scorpionfish (Scorpaenidae) *Scorpaenodes corallinus*, with a re-evaluation of coronal spines as a diagnostic character. Species Diversity, **28** (1): 123–131.

Sato, M. C, Y. Dewa, M. Matsuoka, S. Dewa, H. Motomura (2023). First records of 23 fish species from Iwo-jima island, Osumi Islands, Satsunan Islands, Kagoshima Prefecture, Japan. Ichthy, Natural History of Fishes of Japan, **32**: 7–12.

Furuhashi, R., H. Motomura (2023). First records of *Pseudogobius melanosticta* (Gobiidae) from Amami-oshima and Miyako-jima islands, Ryukyu Islands, Japan, with re-assessments of diagnostic features and sexual dichromatism and dimorphism. Ichthy, Natural History of Fishes of Japan, **33**: 1–9.

Murase, A., F. Shibuya, S. Nagatomo, Y. Ogata, R. Ooe, H. Motomura, H. Senou (2023). Faunal and biogeographic composition of coastal fishes of southern Miyazaki Prefecture, Kyushu, southern Japan, based on underwater photographs. Ichthy, Natural History of Fishes of Japan, **33**: 33–114.

Yamaguchi, M., I. Takaku, T. Matsumoto, H. Motomura (2023). First records of Scorpaenopsis cotticeps from the Enshu-nada, Kii Peninsula and Yaku-shima island, with comments on their morphological changes with growth and genetic characteristics. Ichthy, Natural History of Fishes of Japan, **34**: 1–8.

Sato, M. C, H. Motomura (2023). Tomiyamichthys russus (Gobiidae) from Tanega-shima Island, Osumi Islands, Kagoshima Prefecture, Japan: first record from the Satsunan Islands and northernmost record for the species. Japanese journal of ichthyology, **70** (2): 237–241.

Motomura H. (2023). An annotated checklist of marine and freshwater fishes from Tanega-shima and Mage-shima islands in the Osumi Islands, Kagoshima, southern Japan, with 536 new records. Bulletin of the Kagoshima University Museum, **20**: 1–250.

Koreeda, R., N. Kukita, Y. Hibino H. Motomura (2023). First records of *Brachysomophis crocodilinus* (Ophichthidae) from the Satsuma Peninsula (Kagoshima mainland; northernmost record), and Tokuno-shima and Yoron-jima islands (Amami Islands), Kagoshima Prefecture, Japan. Ichthy, Natural History of Fishes of Japan, **35**: 28–34.

Fujiwara, K., H. Motomura, G. Shinohara (2023). *Opistognathus ctenion* (Perciformes, Opistognathidae): a new jawfish from southern Japan. ZooKeys, 1179: 353–364.

Furuhashi, R., H. Motomura (2023). Additional records of *Saurida fortis* and *Suarida* cf. *undosquamis* (Aulopiformes: Synodontidae) from Japan, and re-assessment of diagnostic characters and review of previous Japanese records of the two species. Ichthy, Natural History of Fishes of Japan, **36**: 5–16.

Hata, E., H. Motomura (2023). First Satsunan Islands records of *Parmaturus pilosus* (Pentanchidae) from Amami-oshima island, Amami Islands, Japan. Ichthy, Natural History of Fishes of Japan, **36**: 17–21.

Yuki, D., H. Endo, H. Motomura (2023). First records of *Cosmocampus banneri* (Syngnathidae) from Kochi Prefecture and Kagoshima mainland, Japan. Ichthy, Natural History of Fishes of Japan, **36**: 22–24.

Koreeda, R., K. Maeda, H. Motomura (2023). A new subtropical species of goby of genus *Luciogobius* (Gobiidae) from southwestern Japan. Zootaxa, **5361** (3): 390–408.

Nakamura, J., R. Koreeda, T. Maekawa, H. Motomura (2023). The Brownspotted Yellow Bass *Liopropoma maculatum* (Epinephelidae: Liopropominae) from the Koshiki-shima Islands and Amami-oshima island: first records from Kagoshima Prefecture, Japan. Ichthy, Natural History of Fishes of Japan, **38**: 4–7.

Hashimoto, S., H. Motomura (2023). First record of *Gymnothorax pindae* Smith, 1962 (Muraenidae) from Kikai-jima island, Amami Islands, Japan. Ichthy, Natural History of Fishes of Japan, **39**: 26–30.

Koreeda, R., T. Momose, H. Motomura (2024). Records of *Favonigobius reichei* from the Satsuma Peninsula, Kyushu, Japan, review of the distribution of Favonigobius sp. sensu Matsui et al. (2014) in Japan, and revised diagnosis of the two species (Gobiidae). Ichthy, Natural History of Fishes of Japan, **40**: 1–16.

Koreeda, R., H. Motomura (2024). First records of *Arothron reticularis* (Tetraodontidae) from Amami-oshima island, Kagoshima Prefecture, Japan. Ichthy, Natural History of Fishes of Japan, **40**: 22–27.

Matsunuma, M., F. Tashiro, H. Motomura (2024). First Japanese records of the flounders *Pseudorhombus elevatus* and *Pseudorhombus quinquocellatus* (Teleostei: Paralichthyidae) from Okinawa Island, Ryukyu Islands. Species Diversity, **29**: 9–21.

Higuchi, A., H. Senou, I. Takaku, H. Motomura (2024). First Japanese specimens of *Petroscirtes xestus* (Perciformes: Blenniidae: Nemophini) from Yaku-shima and Aka-jima islands. Japanese Journal of Ichthyology, **71** (1): 35–43.

Yuki, D., H. Motomura (2024). First records of *Acentronura tentaculata* Günther, 1870 (Syngnathidae) from the Kagoshima mainland and Ishigaki-jima island, Japan. Ichthy, Natural History of Fishes of Japan, **40**: 54–57.

Dewa, Y., S. Harazaki, H. Motomura (2024). *Enneapterygius sericus*, a new species of triplefin (Perciformes: Tripterygiidae) from the western Pacific Ocean. Ichthyological Research, **71** (3): 388–400.

Sato, M. C, H. Motomura (2024). *Gobiodon spadix*, a new coral goby (Teleostei: Gobiidae) from southern Japan. Ichthyological Research, **71** (3): 422–431.

Matsumoto, T., H. Motomura (2024). *Neomerinthe ornithoptera*, a new species of scorpionfish (Teleostei: Scorpaenidae) from the southwestern Pacific Ocean, with a reassessment of the diagnosis for *N. pallidimacula* (Fowler 1938). Zootaxa, **5428** (1): 135–145.

Hashimoto, S., J.Nakamura, R. Koreeda, H. Motomura (2024). Northernmost records of *Gymnothorax shaoi* (Muraenidae) from Yaku-shima Island, Osumi Islands, Kagoshima Prefecture, Japan. Japanese Journal of Ichthyology, **71** (1): 129–133.