

# Outline of Dredge Surveys Conducted from 2007 to 2010 by R/V *Takunan* and *Koyo* to Elucidate the Benthic Marine Invertebrate Fauna of the Area Encompassing the Izu and Ogasawara Islands

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**Abstract.** Dredge surveys, overseen by the National Museum of Nature and Science in collaboration with the Tokyo Metropolitan Center for Agriculture, Forestry and Fisheries on the Izu Islands and the Tokyo Metropolitan Ogasawara Fisheries Center from 2007 to 2010, were made with the aim of clarifying the benthic marine invertebrate fauna in the Izu and Ogasawara Islands region. Two types of dredges, for collecting specimens from rocky and sandy bottoms, respectively, were used. Thirty dredge samples were collected by R/V *Takunan* in 30–300m depth around Hachijōjima Island (Izu Islands) in 2007 to 2009, with a further ninety-one samples collected by R/V *Koyo* from 50–670m depth around Chichijima and Hahajima Island Groups (Ogasawara Islands) in 2008 to 2010. Many benthic marine invertebrates and algae were collected by these dredge surveys, subsequent studies on the specimens being published in the Memoirs of the National Museum of Nature and Science, No. 47 (2011).

**Key words:** dredge survey, Izu Islands, Ogasawara Islands, benthic marine fauna.

## Introduction

Sagami Bay, a well-known area rich in marine biodiversity, has been subjected to continuous biological surveys over the last ca. 130 years (Namikawa, 2007). Nevertheless, to better understand the biodiversity of Sagami Bay and examine whether or not the area has been much influenced by urbanization of the surrounding coastline, the National Museum of Nature and Science [=the National Science Museum] (NSMT) launched a biological survey project from 2001 to 2005. Many research results resulting from the survey have been published in the Memoirs of the National Science Museum, Nos. 40–42 (2006), in-

cluding the partial similarity in coastal fish fauna between Sagami Bay and the Izu–Ogasawara region, considered as the “Izu–Ogasawara element” in the Sagami Bay coastal fish fauna (Senou *et al.*, 2006).

Whether or not an “Izu–Ogasawara element” was similarly important in the benthic marine invertebrate species composition in Sagami Bay remained unknown, however, although important in any consideration of the origins of the latter and likely more conspicuous owing to the restricted movement of such invertebrates (egg or larval stages only). Accordingly, NSMT initiated a dredge-based survey to clarify any “Izu–Ogasawara element” existing in the benthic marine

invertebrate fauna of Sagami Bay.

In the Izu–Ogasawara region, fishery surveys have been conducted by research vessels of the Tokyo Metropolitan Center for Agriculture, Forestry and Fisheries on Izu Islands (TMCAFFI) and the Tokyo Metropolitan Ogasawara Fisheries Center (TMOFC). The NSMT dredge surveys were incorporated into the survey programs of these vessels, in collaboration with TMCAFFI and TMOFC, from 2007 to 2010. An outline of the dredge surveys is provided herein.

### Overview of dredge surveys

The dredge surveys were organized from two research bases, the Hachijō Branch of TMCAFFI in the Izu region (utilizing the R/V *Takunan*) and the TMOFC in the Ogasawara region (R/V *Koyo*) (Fig. 1). R/V *Takunan* (44 tons) was operated by

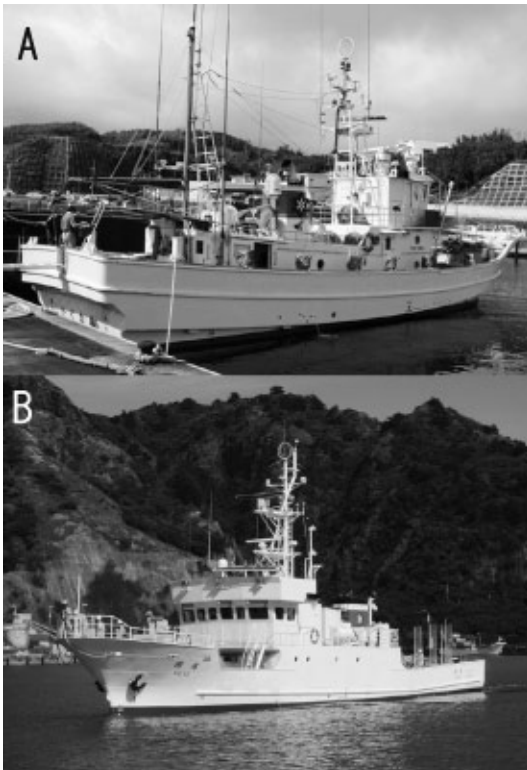


Fig. 1. Research vessels employed in dredge surveys; A, R/V *Takunan* of Hachijō Branch of TMCAFFI; B, R/V *Koyo* of TMOFC.

Captain Shimizu and seven crewmembers, and R/V *Koyo* (87 tons), by Captain Gonoï and nine crewmembers. Research teams comprised 3 or 4 persons, plus 1 representative of TMCAFFI or TMOFC, respectively.

### Sampling gears and methods

Two dredges (Rigo Co., Ltd.) were employed for the surveys: an ORI biological dredge (50cm width) for soft bottoms and a modified “Niino style” dredge (50cm or 1m width) for rocky bottoms (Fig. 2). The latter included a canvas bag at the back (instead of the original large mesh basket for rock samples), to enable the collection of small invertebrates.

The dredges were towed using Spun-Teton cross rope (14mm in diameter), 600m for R/V *Takunan* and 1000m for R/V *Koyo*. After reaching the bottom, each dredge was trawled for not more than 10 minutes and hoisted by line-hauler or winch (Fig. 3).

### Dredge surveys in detail

Two survey areas were selected (Fig. 4), around Chichijima and Hahajima Island Gourps



Fig. 2. Sampling gears; A, ORI biological dredge (50cm in width); B, modified Niino style dredge (50cm in width).

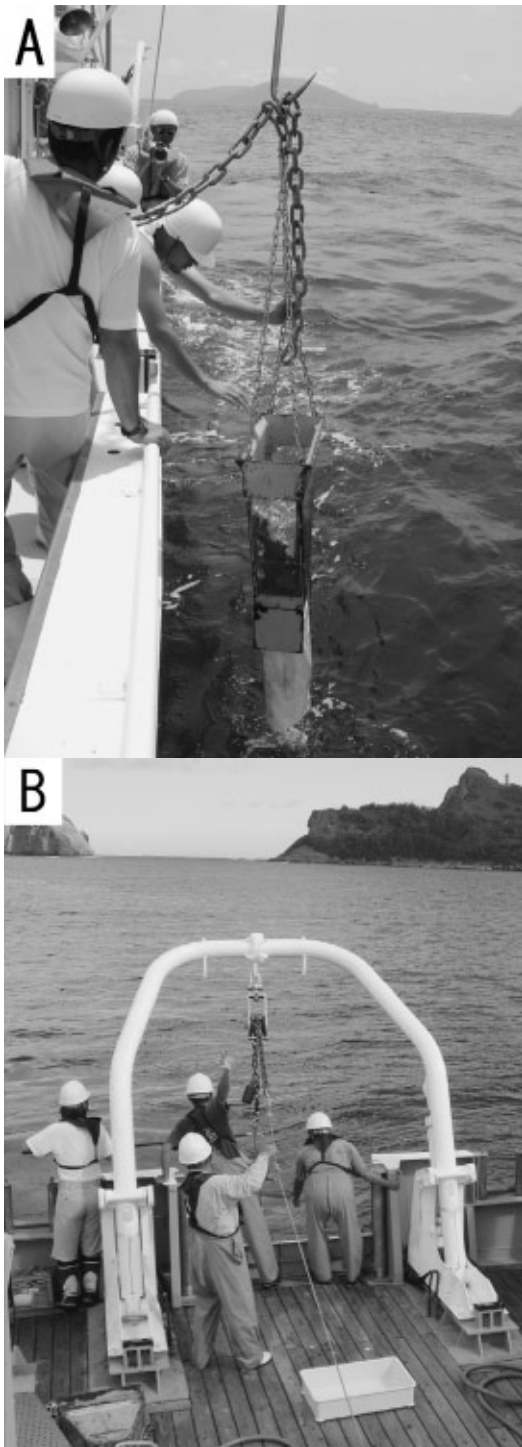


Fig. 3. Dredges were hoisted from port by line-hauler in R/V *Takunan* (A) and from after part by winch in R/V *Koyo* (B). (Photo by Dr. Fujita)

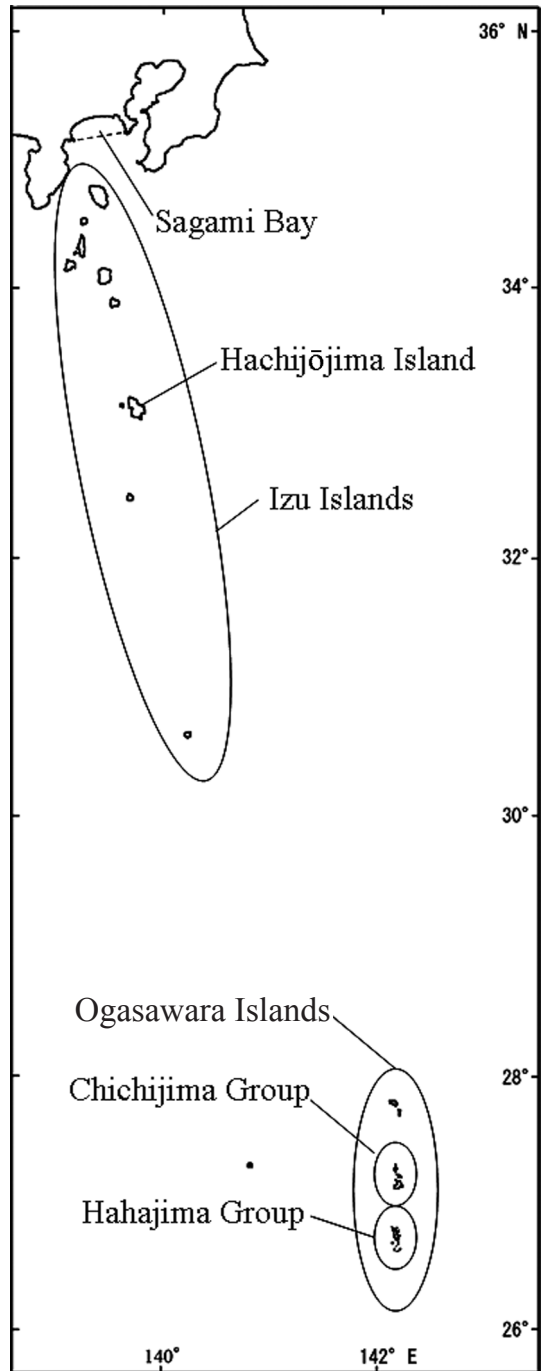


Fig. 4. Sea area from Sagami Bay to the Ogasawara Islands.

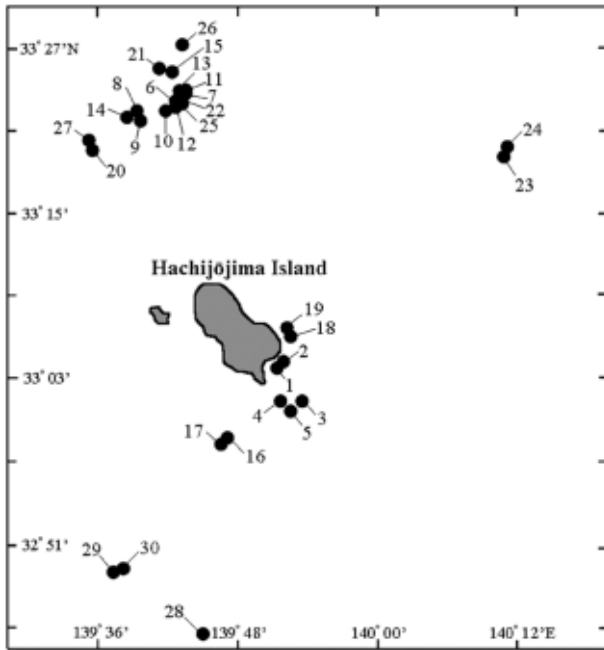


Fig. 5. Sampling station around Hachijōjima Island. Numbers on the map correspond to those in Table 1.

Table 1 Sampling stations of dredge surveys operated by R/V *Takanan*

| Stn. | Date       | Sampling station                                      | Depth     | Gear*    |
|------|------------|---|-----------|----------|
| 1    | 2007.7.24  | 33°04.000'N, 139°51.126'E – 33°04.236'N, 139°51.220'E | 31–32 m   | 50 cm RD |
| 2    | 2007.7.24  | 33°04.115'N, 139°51.142'E – 33°03.894'N, 139°50.943'E | 31 m      | 50 cm RD |
| 3    | 2007.7.24  | 33°00.861'N, 139°52.527'E – 33°00.890'N, 139°52.538'E | 95 m      | 50 cm RD |
| 4    | 2007.7.24  | 33°01.550'N, 139°51.555'E – 33°01.498'N, 139°51.516'E | 79–80 m   | 50 cm RD |
| 5    | 2007.7.24  | 33°01.366'N, 139°53.289'E – 33°01.220'N, 139°53.102'E | 103–99 m  | 50 cm RD |
| 6    | 2007.7.25  | 33°22.509'N, 139°42.502'E – 33°22.383'N, 139°42.352'E | 112–111 m | 50 cm RD |
| 7    | 2007.7.25  | 33°22.889'N, 139°42.898'E – 33°22.786'N, 139°42.523'E | 118–115 m | 50 cm RD |
| 8    | 2007.7.25  | 33°22.097'N, 139°39.206'E – 33°21.945'N, 139°38.833'E | 155–157 m | 50 cm RD |
| 9    | 2007.7.25  | 33°21.779'N, 139°38.381'E – 33°21.662'N, 139°37.989'E | 160–162 m | 50 cm RD |
| 10   | 2007.9.10  | 33°22.570'N, 139°42.444'E – 33°22.745'N, 139°42.725'E | 112 m     | 50 cm RD |
| 11   | 2007.9.10  | 33°22.714'N, 139°42.668'E – 33°22.752'N, 139°42.642'E | 113–114 m | 50 cm RD |
| 12   | 2007.9.10  | 33°22.581'N, 139°42.450'E – 33°22.689'N, 139°42.571'E | 111–113 m | 50 cm RD |
| 13   | 2007.9.10  | 33°22.580'N, 139°42.408'E – 33°22.817'N, 139°42.653'E | 111–114 m | 50 cm RD |
| 14   | 2007.9.10  | 33°21.697'N, 139°39.474'E – 33°21.976'N, 139°39.486'E | 151–147 m | 50 cm RD |
| 15   | 2007.9.10  | 33°25.030'N, 139°42.034'E – 33°25.256'N, 139°42.059'E | 145–136 m | 50 cm RD |
| 16   | 2007.9.11  | 32°58.454'N, 139°46.644'E – 32°58.344'N, 139°47.043'E | 207–208 m | 50 cm RD |
| 17   | 2007.9.11  | 32°58.460'N, 139°46.543'E – 32°58.389'N, 139°46.846'E | 207–206 m | 50 cm RD |
| 18   | 2007.9.11  | 33°06.050'N, 139°52.360'E – 33°05.855'N, 139°52.329'E | 81–76 m   | 50 cm RD |
| 19   | 2007.9.11  | 33°06.704'N, 139°52.002'E – 33°06.542'N, 139°51.969'E | 76–66 m   | 50 cm RD |
| 20   | 2008.7.16  | 33°19.343'N, 139°35.412'E – 33°19.211'N, 139°35.746'E | 194–188 m | 50 cm RD |
| 21   | 2008.7.16  | 33°25.119'N, 139°40.960'E – 33°25.035'N, 139°41.237'E | 222–184 m | 50 cm RD |
| 22   | 2008.7.16  | 33°22.006'N, 139°41.601'E – 33°21.974'N, 139°41.930'E | 116–123 m | 50 cm RD |
| 23   | 2008.7.17  | 33°19.038'N, 140°10.653'E – 33°18.828'N, 140°10.416'E | 213–226 m | 50 cm RD |
| 24   | 2008.7.17  | 33°19.282'N, 140°10.923'E – 33°19.123'N, 140°10.433'E | 205–201 m | 50 cm RD |
| 25   | 2009.10.14 | 33°22.577'N, 139°42.936'E – 33°22.414'N, 139°42.829'E | 132–139 m | 50 cm RD |
| 26   | 2009.10.14 | 33°27.117'N, 139°42.964'E – 33°26.942'N, 139°43.497'E | 194–236 m | 50 cm RD |
| 27   | 2009.10.14 | 33°19.937'N, 139°35.166'E – 33°20.146'N, 139°35.254'E | 201–190 m | 50 cm RD |
| 28   | 2009.10.15 | 32°44.394'N, 139°44.942'E – 32°44.484'N, 139°44.714'E | 233–289 m | 50 cm RD |
| 29   | 2009.10.15 | 32°49.168'N, 139°37.867'E – 32°49.117'N, 139°37.329'E | 281–303 m | 50 cm RD |
| 30   | 2009.10.15 | 32°49.235'N, 139°37.869'E – 32°49.449'N, 139°37.964'E | 269–320 m | 50 cm RD |

\* : 50 cm RD is the modified Niino style dredge (50 cm in width).

in the north Ogasawara Islands, and around Hachijōjima Island in the south Izu Islands, these areas being subjected to the passage of the Kuroshio Current, alternately a “barrier” or “belt conveyor” in the distribution of marine animals (Senou *et al.*, 2006)

A total of thirty benthic surveys (30–300m depth), two to six per day, were made by R/V *Takunan* around Hachijōjima Island, mainly on the rocky sides of sea mounts, such as Kurose and Takunanyama, from 2007 to 2009 (Fig. 5, Table 1). Ninety one benthic surveys (50–670m depth), five to nine per day, were made by R/V *Koyo* around Chichijima and Hahajima Island Gourps, from 2008 to 2010 (Figs. 6–7, Table 2).

Marine organisms collected by dredge were sorted from sample sediments on the decks of the research vessels (Fig. 8), and conveyed to the research base each evening for initial taxonomic sorting and fixing in 10% formalin or 70% etha-

nol, and subsequent transfer to NSMT for further study.

### Outline of research results based on specimens collected

The surveys operated by R/V *Takunan* and R/V *Koyo* were characterized by repeated dredging in the same sea area for three years (Figs. 5–7, Tables 1–2), thereby providing a large number of marine organisms from those areas. The specimens collected comprised mostly sessile marine invertebrates living on hard substrata, such as sponges, gorgonians and bryozoans (Fig. 9). These sessile animals played an important role as hosts, being inhabited by many species of (e.g.) ophiuroids and crustaceans. Many algal specimens attached to rocks were also gathered. Because many trawls were made on rocky bottoms, the collections potentially included many exam-

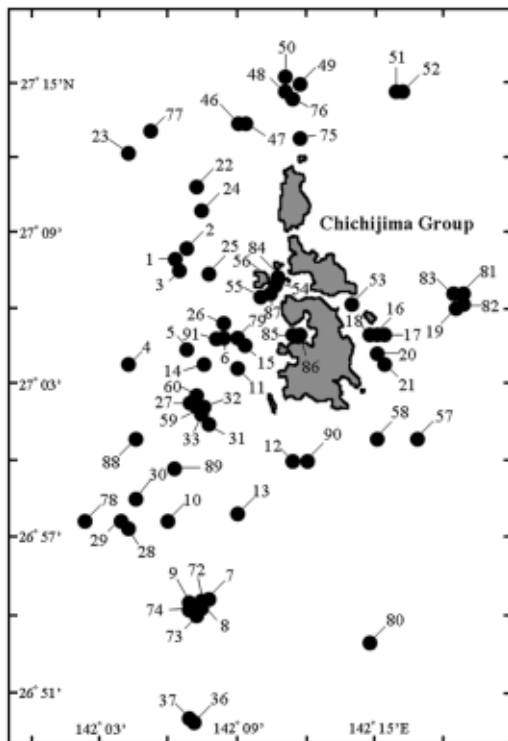


Fig. 6. Sampling station around Chichijima Island Group. Numbers on the map correspond to those in Table 2.

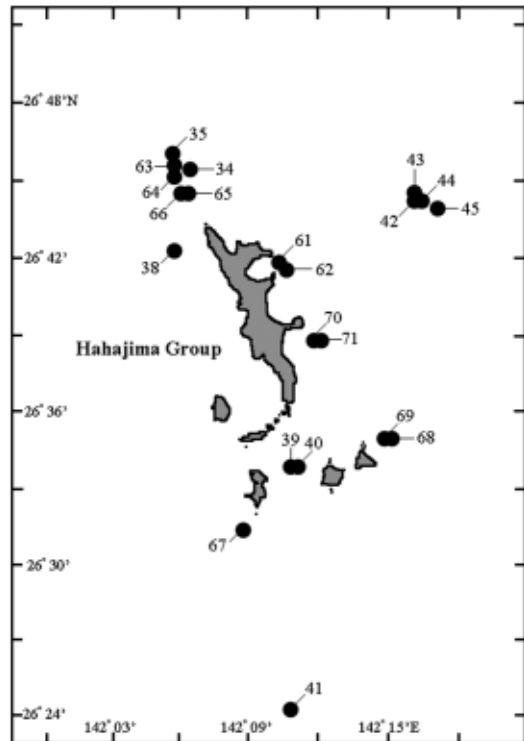


Fig. 7. Sampling station around Hahajima Island Group. Numbers on the map correspond to those in Table 2.

ples of undescribed or unreported species. Some initial studies on the specimens collected in these surveys were published in the *Memoirs of the National Museum of Nature and Science*, No. 47 (2011).

The value of the repeated dredging surveys was highlighted following a comparison with the results of 130 years of Sagami Bay studies (Namikawa, 2007). Accordingly, dredge surveys under the collaboration of the NSMT, TMCAFFI and TMOFC will be continued to further clarify the marine biota in the Izu–Ogasawara region.

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Fig. 8. Sorting on the decks of the research vessels.



Fig. 9. Specimens collected by dredges; A, hard substrata on which sessile organisms incrustated; B, Gorgonian specimens. (Photo by Dr. Komatsu).

Table 2. Sampling stations of dredge surveys operated by R/V *Koyo*

| Stn. | Date       | Sampling station                                      | Depth     | Gear*    |
|------|------------|---|-----------|----------|
| 1    | 2008.10.24 | 27°07.631'N, 142°06.406'E – 27°07.763'N, 142°06.516'E | 154–153 m | 50 cm BD |
| 2    | 2008.10.24 | 27°07.881'N, 142°06.670'E – 27°08.038'N, 142°06.799'E | 151–153 m | 50 cm BD |
| 3    | 2008.10.24 | 27°07.446'N, 142°06.382'E – 27°07.855'N, 142°06.902'E | 154–152 m | 50 cm BD |
| 4    | 2008.10.24 | 27°03.599'N, 142°04.218'E – 27°03.783'N, 142°03.848'E | 211–214 m | 50 cm BD |
| 5    | 2008.10.24 | 27°04.491'N, 142°06.780'E – 27°04.546'N, 142°07.027'E | 128–117 m | 50 cm RD |
| 6    | 2008.10.24 | 27°04.644'N, 142°08.518'E – 27°04.691'N, 142°08.683'E | 88 m      | 50 cm RD |
| 7    | 2008.10.27 | 26°54.259'N, 142°07.115'E – 26°54.015'N, 142°07.112'E | 135–146 m | 50 cm RD |
| 8    | 2008.10.27 | 26°53.991'N, 142°07.107'E – 26°54.346'N, 142°07.194'E | 146–139 m | 50 cm RD |
| 9    | 2008.10.27 | 26°54.221'N, 142°06.694'E – 26°54.167'N, 142°06.612'E | 132–134 m | 50 cm BD |
| 10   | 2008.10.27 | 26°57.674'N, 142°06.059'E – 26°57.533'N, 142°06.071'E | 330 m     | 50 cm BD |
| 11   | 2008.10.27 | 27°03.622'N, 142°08.889'E – 27°03.658'N, 142°08.882'E | 56–62 m   | 50 cm RD |
| 12   | 2008.10.28 | 27°00.193'N, 142°11.609'E – 27°00.208'N, 142°11.743'E | 136–135 m | 50 cm RD |
| 13   | 2008.10.28 | 26°58.069'N, 142°09.066'E – 26°57.812'N, 142°09.057'E | 150–152 m | 50 cm BD |
| 14   | 2008.10.28 | 27°03.846'N, 142°07.644'E – 27°03.663'N, 142°07.869'E | 109–97 m  | 50 cm BD |
| 15   | 2008.10.28 | 27°04.548'N, 142°09.156'E – 27°04.729'N, 142°09.314'E | 83–81 m   | 50 cm RD |
| 16   | 2008.10.29 | 27°04.992'N, 142°14.976'E – 27°04.798'N, 142°14.982'E | 53–49 m   | 50 cm RD |
| 17   | 2008.10.29 | 27°05.022'N, 142°15.217'E – 27°04.856'N, 142°15.212'E | 70–69 m   | 50 cm BD |
| 18   | 2008.10.29 | 27°05.014'N, 142°14.894'E – 27°04.881'N, 142°14.865'E | 49–48 m   | 50 cm BD |
| 19   | 2008.10.29 | 27°06.073'N, 142°18.563'E – 27°06.062'N, 142°18.756'E | 175–176 m | 50 cm BD |
| 20   | 2008.10.29 | 27°04.233'N, 142°15.185'E – 27°04.216'N, 142°15.058'E | 54–52 m   | 50 cm BD |
| 21   | 2008.10.29 | 27°03.840'N, 142°15.436'E – 27°03.703'N, 142°15.228'E | 95–98 m   | 50 cm BD |
| 22   | 2008.10.30 | 27°10.647'N, 142°07.271'E – 27°10.711'N, 142°07.374'E | 150–151 m | 50 cm BD |
| 23   | 2008.10.30 | 27°12.043'N, 142°04.283'E – 27°12.172'N, 142°04.286'E | 202–199 m | 50 cm BD |
| 24   | 2008.10.30 | 27°09.758'N, 142°07.375'E – 27°09.523'N, 142°07.360'E | 158–156 m | 50 cm BD |
| 25   | 2008.10.30 | 27°07.308'N, 142°07.700'E – 27°07.032'N, 142°07.635'E | 129–127 m | 50 cm BD |
| 26   | 2008.10.30 | 27°04.840'N, 142°08.934'E – 27°04.980'N, 142°09.151'E | 84–87 m   | 50 cm BD |
| 27   | 2009.10.10 | 27°02.229'N, 142°07.244'E – 27°02.122'N, 142°07.315'E | 137 m     | 1m RD    |
| 28   | 2009.10.10 | 26°57.632'N, 142°04.114'E – 26°57.655'N, 142°04.499'E | 298–301 m | 50 cm RD |
| 29   | 2009.10.10 | 26°57.641'N, 142°04.159'E – 26°57.673'N, 142°04.648'E | 299–301 m | 50 cm RD |
| 30   | 2009.10.10 | 26°58.638'N, 142°04.639'E – 26°58.577'N, 142°04.504'E | 470 m     | 1 m RD   |
| 31   | 2009.10.10 | 27°01.471'N, 142°07.590'E – 27°01.580'N, 142°07.488'E | 141–140 m | 1 m RD   |
| 32   | 2009.10.10 | 27°01.798'N, 142°07.368'E – 27°01.904'N, 142°07.277'E | 136–137 m | 1 m RD   |
| 33   | 2009.10.10 | 27°01.723'N, 142°07.389'E – 27°01.928'N, 142°07.280'E | 138–136 m | 50 cm BD |
| 34   | 2009.7.13  | 26°45.202'N, 142°06.444'E – 26°45.382'N, 142°06.553'E | 98–102 m  | 50 cm BD |
| 35   | 2009.7.13  | 26°45.644'N, 142°05.754'E – 26°45.874'N, 142°05.878'E | 102–118 m | 50 cm BD |
| 36   | 2009.7.13  | 26°50.248'N, 142°07.093'E – 26°50.403'N, 142°07.176'E | 146–151 m | 50 cm BD |
| 37   | 2009.7.13  | 26°50.019'N, 142°07.074'E – 26°50.097'N, 142°07.111'E | 147–145 m | 50 cm BD |
| 38   | 2009.7.13  | 26°42.240'N, 142°05.795'E – 26°42.303'N, 142°05.793'E | 97–103 m  | 50 cm BD |
| 39   | 2009.7.14  | 26°34.096'N, 142°10.791'E                             | 97 m      | 50 cm BD |
| 40   | 2009.7.14  | 26°34.027'N, 142°10.803'E – 26°34.036'N, 142°10.811'E | 92–93 m   | 50 cm BD |
| 41   | 2009.7.14  | 26°24.793'N, 142°10.915'E – 26°24.812'N, 142°10.917'E | 107–109 m | 50 cm BD |
| 42   | 2009.7.14  | 26°44.060'N, 142°16.393'E – 26°44.081'N, 142°16.357'E | 281 m     | 1 m RD   |
| 43   | 2009.7.14  | 26°44.118'N, 142°16.256'E – 26°44.271'N, 142°16.015'E | 280–284 m | 1 m RD   |
| 44   | 2009.7.14  | 26°44.216'N, 142°16.309'E – 26°44.275'N, 142°16.261'E | 283–284 m | 50 cm BD |
| 45   | 2009.7.14  | 26°43.808'N, 142°17.034'E – 26°43.846'N, 142°17.022'E | 292 m     | 50 cm BD |
| 46   | 2009.7.15  | 27°13.129'N, 142°09.136'E – 27°13.150'N, 142°09.139'E | 136–135 m | 50 cm BD |
| 47   | 2009.7.15  | 27°13.085'N, 142°09.190'E – 27°13.190'N, 142°09.226'E | 136 m     | 50 cm BD |

\* : 50 cm BD is the ORI biological dredge (50cm in width), 50cmRD is the modified Niino style dredge (50cm in width), 1mRD is the modified Niino style dredge (1m in width).

Table 2. (Continued)

| Stn. | Date      | Sampling station                                      | Depth     | Gear*    |
|------|-----------|---|-----------|----------|
| 48   | 2009.7.15 | 27°14.793'N, 142°11.265'E – 27°14.862'N, 142°11.235'E | 91–93 m   | 50 cm BD |
| 49   | 2009.7.15 | 27°14.747'N, 142°11.465'E – 27°14.768'N, 142°11.480'E | 97–100 m  | 50 cm BD |
| 50   | 2009.7.15 | 27°14.789'N, 142°11.228'E – 27°14.816'N, 142°11.237'E | 94–93 m   | 50 cm BD |
| 51   | 2009.7.15 | 27°14.291'N, 142°15.877'E – 27°14.450'N, 142°15.637'E | 246–232 m | 1 m RD   |
| 52   | 2009.7.15 | 27°14.358'N, 142°16.035'E – 27°14.630'N, 142°15.777'E | 251–230 m | 50 cm BD |
| 53   | 2009.7.15 | 27°06.292'N, 142°13.877'E – 27°06.284'N, 142°14.012'E | 81–83 m   | 50 cm BD |
| 54   | 2009.7.15 | 27°07.049'N, 142°10.683'E – 27°07.017'N, 142°10.687'E | 52 m      | 50 cm BD |
| 55   | 2009.7.16 | 27°06.585'N, 142°10.247'E – 27°06.579'N, 142°10.211'E | 61–60 m   | 50 cm BD |
| 56   | 2009.7.16 | 27°07.220'N, 142°10.603'E – 27°07.280'N, 142°10.578'E | 52–50 m   | 50 cm BD |
| 57   | 2009.7.16 | 27°00.836'N, 142°16.813'E – 27°00.922'N, 142°16.564'E | 311–300 m | 50 cm BD |
| 58   | 2009.7.16 | 27°00.707'N, 142°14.910'E – 27°00.791'N, 142°14.792'E | 415–370 m | 50 cm BD |
| 59   | 2009.7.16 | 27°02.194'N, 142°07.257'E – 27°02.274'N, 142°07.267'E | 137 m     | 50 cm BD |
| 60   | 2009.7.16 | 27°02.343'N, 142°07.522'E – 27°02.552'N, 142°07.342'E | 140–141 m | 50 cm BD |
| 61   | 2010.7.5  | 26°41.711'N, 142°10.149'E – 26°41.697'N, 142°09.933'E | 131–119 m | 50 cm BD |
| 62   | 2010.7.5  | 26°41.441'N, 142°10.327'E                             | 115 m     | 50 cm BD |
| 63   | 2010.7.5  | 26°45.323'N, 142°05.986'E – 26°45.297'N, 142°06.282'E | 106–92 m  | 50 cm BD |
| 64   | 2010.7.5  | 26°45.078'N, 142°05.942'E – 26°45.054'N, 142°06.202'E | 101–98 m  | 50 cm BD |
| 65   | 2010.7.5  | 26°44.274'N, 142°06.073'E – 26°44.296'N, 142°06.355'E | 82–73 m   | 50 cm BD |
| 66   | 2010.7.5  | 26°44.290'N, 142°06.225'E – 26°44.289'N, 142°06.368'E | 76–73 m   | 50 cm BD |
| 67   | 2010.7.6  | 26°31.602'N, 142°08.850'E – 26°31.598'N, 142°08.943'E | 105–99 m  | 50 cm BD |
| 68   | 2010.7.6  | 26°35.025'N, 142°14.934'E – 26°34.989'N, 142°14.907'E | 89–82 m   | 50 cm BD |
| 69   | 2010.7.6  | 26°35.024'N, 142°14.936'E – 26°34.981'N, 142°14.901'E | 90–82 m   | 50 cm BD |
| 70   | 2010.7.6  | 26°38.987'N, 142°11.787'E – 26°38.934'N, 142°11.886'E | 85–98 m   | 50 cm BD |
| 71   | 2010.7.6  | 26°38.981'N, 142°11.851'E – 26°38.950'N, 142°11.956'E | 94–83 m   | 50 cm BD |
| 72   | 2010.7.6  | 26°54.216'N, 142°06.934'E                             | 131 m     | 50 cm BD |
| 73   | 2010.7.6  | 26°54.056'N, 142°06.926'E – 26°54.134'N, 142°07.003'E | 127–137 m | 50 cm BD |
| 74   | 2010.7.6  | 26°54.018'N, 142°06.826'E – 26°54.104'N, 142°06.956'E | 130–135 m | 50 cm BD |
| 75   | 2010.7.7  | 27°12.414'N, 142°11.624'E – 27°12.433'N, 142°11.540'E | 72–64 m   | 50 cm GD |
| 76   | 2010.7.7  | 27°14.105'N, 142°11.287'E – 27°14.052'N, 142°11.203'E | 94–96 m   | 50 cm GD |
| 77   | 2010.7.7  | 27°12.775'N, 142°05.143'E – 27°12.466'N, 142°05.136'E | 160 m     | 50 cm BD |
| 78   | 2010.7.7  | 26°57.784'N, 142°02.330'E – 26°57.592'N, 142°02.026'E | 540–529 m | 1 m RD   |
| 79   | 2010.7.7  | 27°04.819'N, 142°08.952'E – 27°04.746'N, 142°09.064'E | 87–91 m   | 1 m RD   |
| 80   | 2010.7.8  | 26°53.191'N, 142°14.769'E – 26°53.093'N, 142°14.891'E | 670–669 m | 1 m RD   |
| 81   | 2010.7.8  | 27°06.200'N, 142°18.819'E – 27°06.111'N, 142°18.729'E | 177–178 m | 1 m RD   |
| 82   | 2010.7.8  | 27°06.173'N, 142°18.784'E – 27°06.073'N, 142°18.671'E | 176–178 m | 50 cm BD |
| 83   | 2010.7.8  | 27°06.226'N, 142°18.820'E – 27°06.041'N, 142°18.685'E | 178–179 m | 50 cm BD |
| 84   | 2010.7.8  | 27°07.231'N, 142°10.701'E – 27°07.142'N, 142°10.732'E | 47–51 m   | 50 cm BD |
| 85   | 2010.7.9  | 27°04.770'N, 142°11.684'E – 27°04.756'N, 142°11.728'E | 42 m      | 50 cm BD |
| 86   | 2010.7.9  | 27°04.677'N, 142°11.718'E – 27°04.683'N, 142°11.556'E | 36–40 m   | 50 cm BD |
| 87   | 2010.7.9  | 27°06.646'N, 142°10.418'E – 27°06.610'N, 142°10.290'E | 59–60 m   | 50 cm BD |
| 88   | 2010.7.9  | 27°00.757'N, 142°04.516'E – 27°00.509'N, 142°04.517'E | 673 m     | 50 cm BD |
| 89   | 2010.7.9  | 26°59.889'N, 142°06.143'E – 27°00.262'N, 142°05.982'E | 333–321 m | 50 cm BD |
| 90   | 2010.7.9  | 27°00.143'N, 142°12.114'E – 27°00.156'N, 142°11.912'E | 147–139 m | 50 cm BD |
| 91   | 2010.7.9  | 27°05.181'N, 142°08.478'E – 27°05.118'N, 142°08.391'E | 97 m      | 50 cm BD |

\* : 50 cm BD is the ORI biological dredge (50cm in width), 50cmRD is the modified Niino style dredge (50cm in width), 1mRD is the modified Niino style dredge (1m in width).



漁業調査指導船「たくなん」及び「興洋」による  
伊豆・小笠原海域での底生海産無脊椎動物相調査（2007–2010年）

並河 洋・山口邦久・堀井善弘・田中優平

国立科学博物館は、東京都島しょ農林水産総合センター及び東京都小笠原水産センターと共同で、伊豆・小笠原海域の底生海産無脊椎動物相を明らかにするために調査プロジェクトを実施した。このプロジェクトの目的を達成させるために、島しょ農林水産センター八丈事業所所属漁業調査指導船「たくなん」及び小笠原水産センター所属同「興洋」によるドレッジ調査を実施した。ドレッジ調査は、岩石採取用と生物採取用の2タイプのドレッジを使用し、ロープを使って曳網した。「たくなん」によるドレッジ調査は、八丈島周辺海域の30–300mの水深帯で2007年から2009年までの3年間で合計30回行なった。「興洋」によるドレッジ調査は、2008年から2010年まで、小笠原諸島父島列島並びに母島列島周辺海域の50–670mの水深帯で合計91回行なった。これらのドレッジ調査により、底生無脊椎動物に加え海藻類の標本を多数収集することができた。ドレッジ調査で採集された標本についての研究成果は、国立科学博物館専報47号に掲載された各論文で公表された。