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# Recent Developments in the Faunal Surveys of Sagami Bay

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## ABSTRACT

The faunal surveys of Sagami Bay, originated by Dr. Döderlein, were subsequently expanded by the Biological Laboratory of the Imperial Household during the 20th century. From the beginning of the present century, however, the National Science Museum, Tokyo, has assumed the responsibility for continued surveys. As a result of the emphasis on such surveys, much has been learnt about the marine fauna of Sagami Bay and reported in many publications, thereby underlining the importance of Sagami Bay as an area abundant in unique marine forms.

**Keywords:** Sagami Bay, Faunal surveys, Showa Emperor, National Science Museum

## INTRODUCTION

Sagami Bay, a small bay located in the central region of Japan, is recognized world-wide as a region abundant in unique marine animals [1–3], the rich fauna apparently being supported by a unique natural environment; including both topographical features and incoming ocean currents. Such recognition is primarily due to the accumulated results of faunal surveys in the area, crossing over three centuries [3]. The Biological Laboratory of the Imperial Household conducted an important series of faunal surveys of Sagami Bay in the 20th century, a continuation of such surveys now being the responsibility of the National Science Museum, Tokyo (currently, the National Museum of Nature and Science). This paper provides an overview of the faunal surveys of Sagami Bay conducted by both the Biological Laboratory of the Imperial Household and the National Science Museum.

## OVERVIEW OF RECENT FAUNAL SURVEYS OF SAGAMI BAY

### I. The Biological Laboratory of the Imperial Household (BLIH)

The Biological Laboratory of the Imperial Household is a private institute, founded by His Majesty the Showa Emperor Hirohito, around 1929. The BLIH carried out research on Sagami Bay and adjacent waters from 1929 to 1988, playing a significant role in faunal surveys. The three primary characteristics of such surveys included: 1) repeated surveys in the same part of eastern Sagami Bay for 40 years, 2) comprehensive collections of specimens ranging from Protozoa to fishes, and 3) extensive commissioned studies by specialists on respective animal taxa.

The BLIH collected specimens actively, dredging the offshore seabed in the vicinity of early surveys by Dr. Döderlein and others. The dredge used had been specially adapted so as to collect specimens, even on rocky substrates. Although the research vessel was relatively small, the BLIH successfully collected specimens from the sea bottom at 500 m

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depth. More than 25,000 specimens of marine invertebrates were collected from the coastal to offshore seabed by the BLIH over some 60 years, including 40 years in eastern Sagami Bay and 20 years in the Sagami Sea off the Izu Peninsula. Numerous BLIH specimens, except for hydrozoans studied by the Showa Emperor himself, were sent to respective experts for taxonomic study, the results often being compiled into BLIH monographs. Studies on 13 taxonomic groups, including Hydrozoa, were published in the monographs [4], in addition to those published in other journals. Since few monographs had been otherwise prepared on Japanese marine animals in this period, the former were documents of great importance not only for Sagami Bay, but also for faunal research in Japan. Accordingly, over 400 new species were described in the BLIH-published monographs and elsewhere. Among Cnidaria, 32 new species of Hydrozoa were described by the Showa Emperor. The BLIH surveys also contributed to an accumulation of biological knowledge from a phylogenetic perspective. Faunal survey profiles and their importance have been explained elsewhere [3–6].

All specimens deposited in the BLIH, including type materials, were moved to the National Science Museum in 1993–1994, being presently deposited in the Showa Memorial Institute in the Tsukuba branch of the latter. Many taxa, including Bryozoa and Octocorals, still await study as part of the Sagami Bay research program of the National Science Museum.

## II. The National Science Museum, Tokyo (NSMT)

Sagami Bay has had a unique 100-year history of research, originating with that of Dr. Döderlein up to the BLIH. Faced with the growing urbanization of the 21st century, the NSMT initiated a 5-year faunal survey of Sagami Bay and adjacent waters from 2001, in order to understand processes of change as reflected by the marine fauna, compared with previous research results. This faunal survey, the latest in the long history of Sagami Bay surveys, was reported in the “Memoirs of the National Science Museum (Nos. 40–41)” in 2006 [7–8].

As a result of the NSMT faunal survey, 1517 fish species were recorded [9]. In addition, 20 new species were discovered, in Platyhelminthes, Annelida, Anthropoda and Pisces [3, 10–17]. Some species of Cnidaria, Anthropoda, Hemichordata, Echinodermata and Chordata were also recorded for the first time following an interval of 70–100 years since their initial collection [3].

In addition, continuing faunal surveys of Sagami

Bay are likely to reveal the nature of any environmental changes in the area. In particular, sessile animals living on the sea bed are expected to become useful indicators of environmental change. For example, the bryozoan *Steginoporella magnilabris* has been collected in large quantities from the same area of eastern Sagami Bay throughout the overall survey period, indicating that a “Bryozoan bed” and an apparently stable deep-sea floor environment has persisted at least from the late 19th century to the present day. On the other hand, other animals, such as glass sponges, have been rarely collected, even in the deep sea, in recent years [3]. Some shallow water-dwelling animals appear to have been lost due to environmental changes resulting from human disturbance. Some Mollusca, common up to the 1960's, are now no longer collected [3]. At the same time, an increase in some foreign species, introduced through human activity, has been noted [3].

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