

ROH 2014/March

Science Journal of Graduate School of Rakuno Gakuen University



Research of One Health

journal homepage: <http://clover.ac.jp/dspace/kiyo/>

Letter

An ectoparasite and epizoite from a western gray whale (*Eschrichtius robustus*) stranded on Tomakomai, Hokkaido, Japan

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Abstract

Postmortem examination was performed on a female western gray whale (*Eschrichtius robustus*) stranded at Tomakomai-shi, Hokkaido, Japan in August, 2007, and amphipod whale lice (*Cyamus scammoni*) and cirripedian epizoites (*Cryptolepas rachianecti*) were obtained. The histopathological investigation of the epizoites was given.

Keywords: health, ectoparasite, epizoite, western gray whale, stranding

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This paper was first submitted at Sept 25th in 2013, and revised according to the opinions of two referee and accepted at Dec 15th in 2013, and published in "J. Rakuno Gakuen Univ., 38, (2): 149-152 (2014).

Introduction

Amphipod whale lice and cirripedian epizoites were obtained from gray whales stranded at Chiba, Honshu, middle Japan [5, 6, 11], but there was no record in Hokkaido. Postmortem examination was performed on a female western gray whale stranded at Nishiki-oka, Tomakomai-shi, Hokkaido, northern Japan in August 2, 2007. Helminthological examinations on kidney and liver with naked eyes on the beach, and

on whole intestinal (ca. 109 m in length) content with binocular in Wild Animal Medical Center (WAMC), Rakuno Gakuen University, could not obtain any parasites. However, some ectoparasites and epizoites were obtained. In the present letter, the record is given.

Materials and Methods

60 individuals of amphipod ectoparasite and 22 individuals of cirripedian epizoite were obtained from skin of left side of the whale

(Coll No. WAMC/AS/7903). All the specimens were fixed and preserved in ca. 70 % ethanol, and the local dermal tissue infested by the cirripeds were decalcified, embedded in paraffin block, sectioned and finally stained with hematoxylin-eosin for the histopathological examination.

Results and Discussion

The present amphipod whale lice are accorded with *Cyamus scammoni* Dall, 1872 (Amphipoda: Cyamidae) because of having broad-oval shaped body and coiled gills (Fig. 1) [1, 8, 11]. Three amphipod species of the right whales (*Eubalaena* spp.) which are closely related the genus *Eschrichtius* [4], namely *Cyamus ovalis* Roussel de Vauzème, 1834, *C. gracilis* Roussel de Vauzème, 1834 and *C. erraticus* Roussel de Vauzème, 1834 occupy different parts of the whale and show different body size and color [7], while three species of the genus *Cyamus*, i.e. *C. ceti* (Linnaeus, 1758), *C. kessleri* Brandt, 1872 and *C. scammoni* which have been recorded from *Eschrichtius gibbosus* [sic] (now addressed in *E. robustus*) do not show such a clear site specificity. And, all three species of the *Cyamus* have been reported from eastern North Pacific Ocean, Bering Sea, Chukchi Sea and Beaufort Sea. However, from western North Pacific Ocean, Sea of Okhotsk and Sea of Japan, only *C. scammoni* has been recorded [1, 8]. Around 35 species of the genus *Cyamus* and its allies have been described, but systematic revisions using new morphological and molecular data are expected to increase this number substantially [7]. So, we will investigate molecular characteristics with partial sequences of COI, COII and the intervening leucine tRNA gene from PCR products of the present specimens to compare with each taxon of the right whale's amphipod parasites,

and a precise identification will be given based on both morphological and molecular based examinations.

The amphipod species seem to eat not only fibrous algae but also cutaneous scales of their hosts, and are burrowers and penetrate the horny layer of the hosts' epidermis and/or cracks between sessile barnacles [1]. This mode of parasitism may provoke physical stimulation to the host whales when the abundance of the amphipod attains remarkably high. Furthermore, it is unknown whether they might be responsible for a carrier or vector of the micropathogens (i.e., virus, bacteria, fungi, protozoa etc.) of whales. The present case is the second record in Japanese territory, because *C. scammoni* was obtained from *E. robustus* entangled in a set net in Tokyo Bay [11].

On the other hand, the cirripedian epizootes were identified to *Cryptolepas rachianecti* Dall, 1872 (Cirripedia: Coronulidae) (Fig. 2 upper). This species have been found from gray whales at Chiba, Honshu, middle Japan [5, 6, 11]. According to the histopathological investigation, it was found that local storage of mineral induced from cement gland of *C. rachianecti* occurred in granule cells. Acanthosis probably due to a reaction against the mineral storage was observed in some restricted dermal tissue areas (Fig. 2 lower). However, any inflammation cells or fibers were not observed there.

According to these findings, infestation of *C. rachianecti* may not be related to the direct mortality, supporting the idea that member of the family Coronulidae containing the genera *Chelonibia*, *Platylepas*, *Coronula*, *Cryptolepas* and *Xenobalanus*, all of which have been recorded from the skin of whales and dolphins, are regarded as phoresy [5, 6, 9, 10]. In contrast, it is suggested that settlements of some cirripedians may

increase due to reduced swimming speed of whales and/or impaired regenerative faculty and immune responses of the skin prior to death [1]. However, slow swimmers such like gray whales must be desirable targets for cirripedians.

Acknowledgements

The present survey was supported in part by a Grant-in-Aid (Nos. 18510205, 20380163) and by the Strategic Research Foundation at Private Universities (2013-2017) from the Ministry of the Education, Science and Culture of Japan.

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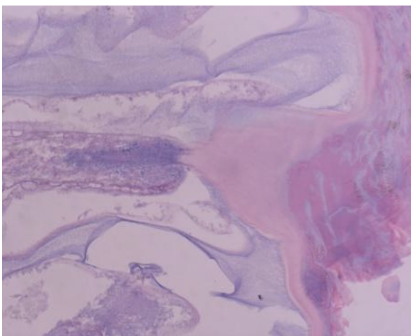
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Fig. 1. *Cyamus scammoni* obtained from head of a western gray whale (*Eschrichtius robustus*) stranded on Tomakomai, Hokkaido, Japan.



Fig. 2. *Cryptolepas rachianecti* on western gray whale (*Eschrichtius robustus*) stranded on Tomakomai, Hokkaido, Japan (upper), and its dermal tissue reaction (acanthosis) of stained with hematoxylin-eosin (lower).



北海道苫小牧市の海岸でストランドしたコククジラ (*Eschrichtius robustus*) の外部寄生虫と着生生物について

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和文摘要

2007年8月、北海道苫小牧市の海岸でストランド(座礁)したコククジラ(*Eschrichtius robustus*) 雌1個体の外部寄生虫クジラジラミ類 (*Cyamus scammoni*) と着生生物フジツボ類(*Cryptolepas rachianecti*)について、日本では千葉に続き二例目の記録をした。また、*C. rachianecti*の着生部位における組織病理学的検索も実施した。