□寄生虫学□ Research note

Records of Barnacle, *Xenobalanus globicipitis* Steenstrup, 1851 and Whale Lice, *Cyamus* sp. from a Wild Killer Whale Captured in the Western North Pacific, off Kii Peninsula, Japan

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紀伊半島沖太平洋で記録されたシャチ（*Orcinus orca*）のエボシフジツボ *Xenobalanus globicipitis* Steenstrup, 1851 とクジラジラミ *Cyamus* sp.

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ABSTRACT. One cirripedian epizoit and several immature amphipod whale louse were obtained from the skin of a killer whale (*Orcinus orca*) captured in the western North Pacific off Kii Peninsula in 1988. The barnacle was identified to be *Xenobalanus globicipitis* Steenstrup, 1851 representing the first record from a killer whale, but the whale louse of the genus *Cyamus* could not be identified to species. Epizoits are not parasitic but to be commensal (e. g. phoresy). It has been suggested that settlement of *X. globicipitis* and another cirripedian group (the genera *Lepas* and *Conchoderma*: Lepadidae) on dolphins might increase because of reduced movement and/or impaired regenerative and immune functioning of the skin prior to death. Hence, monitoring of such cirripedian species is needed.

Key words: *Orcinus orca*, *Xenobalanus globicipitis*, *Cyamus* sp.

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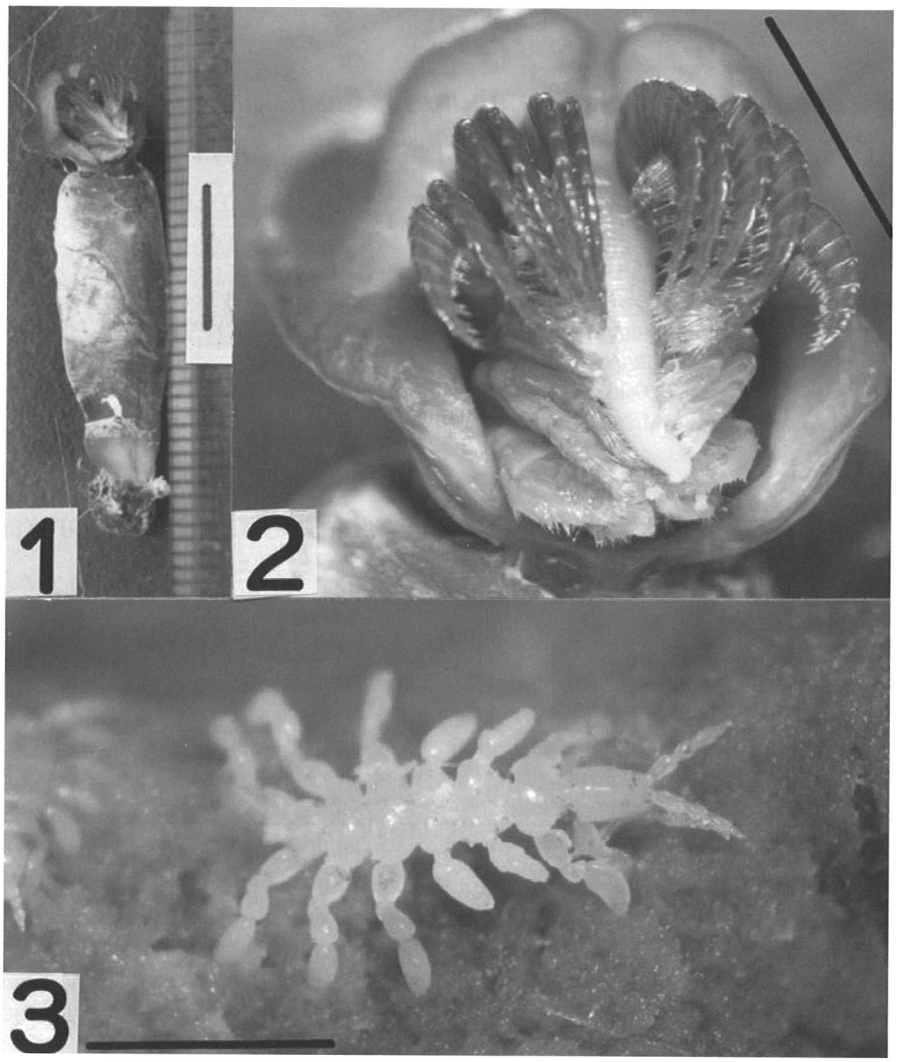
Although several epizoits and external parasites have been recorded worldwide on killer whales (*Orcinus orca*) [1, 2], there is no reliable parasitological data from the whale species in Japanese territorial waters or aquariums. We recently examined a barnacle and several whale louse specimens obtained from a wild killer whale in Japan. Those found are presented here, and ecological and pathological overviews of the host are given. The killer whale was captured in the Pacific Ocean off Kii Peninsula in the winter of 1988. A barnacle attached on the fin and amphipod whale louse on the body skin were collected, preserved in 5 % formaldehyde solution at an aquarium and later deposited to the Wild Animal Medical Center, Rakuno Gakuen University, and they were registered (WAMC-AS. No. 8377-1.and -2). All specimens were investigated morphologically under a microscope.

A "pseudo-starked" barnacle (Figs. 1 and 2) measured 36 mm in total body length, 24 mm in stalk length and 9 mm in body width. This organism has a peduncle-like body, a star-like shell wall, no opercular plates, and short and thick cirri. These characteristics, including the mouth parts (Fig. 4), accorded with the description of *Xenobalanus globicipitis* Steenstrup, 1851 [3-6].

This barnacle has been reported on various species of cetaceans inhabited in tropical, temporal and cold waters, e.g., sei whales (*Balaenoptera borealis*), blue whale (*B. musculus*), fin whale (*B. physalus*), minke whale (*B. acutorostrata*), bottle-nosed dolphin (*Tursiops truncatus*), Indian ocean bottlenose dolphin (*T. aduncus*), pilot whale (*Globicephala melaena*), fin whale (*Balaenoptera physalus*), common dolphin (*Delphinus delphis*), striped



Figs. 1-3. A barnacle and whale lice obtained from the killer whale (*Orcinus orca*) captured off Wakayama Pref., Japan.
1 : Whole body of *Xenobalanus globicipitis*. Scale bar = 10mm.
2 : Anterior extremity of *X. globicipitis*. Scale bar = 5mm.
3 : Whole body of *Cyamus* sp., Scale bar = 5mm.

dolphin (*Stenella styx*), false killer (*Pseudorca crassidens*), Risso's dolphin (*Grampus griseus*), Tucuxi (*Sotalia* sp.= *S. flubiatilis*, probably) [7-13]. Furthermore, in Japan, the barnacle species has also been found from minke whale, finless porpoise (*Neophocaena phocaenoides*) [12,13] and melon-headed whale (*Peponocephala electra*) (N. Takanawa, M. Kasamatsu, Toba Aquarium, Japan, and one of the authors (T. K. Y.), unpubl.). Hence, the present report appears the first record of *X. globicipitis* from killer whale.

General features of the present specimens of the whale louse accorded with the genus *Cyamus* [1], but could not be identified to species because the specimens were immature (Fig. 3). *C. orcini* and *C. antarcticensis* have been recorded from killer whales captured in the Atlantic and Antarctic Ocean, respectively [1]. On the other hand, Takeda and Ogino [14] listed cyamid species recorded in the waters around Japan, including six species of cyamids from six cetacean species [14], but there is no record from killer whale. Therefore, the present record of *Cyamus* sp. from killer whale off Japan will be included in both lists.

Epizoits are not parasitic but to be commensal (e.g. phoresy). All members of the superfamily Coronulidea including genera *Chelonibia*, *Platylepas*, *Coronula*, *Cryptolepas* and Xenobalanus have been recorded from skin of sea turtles,

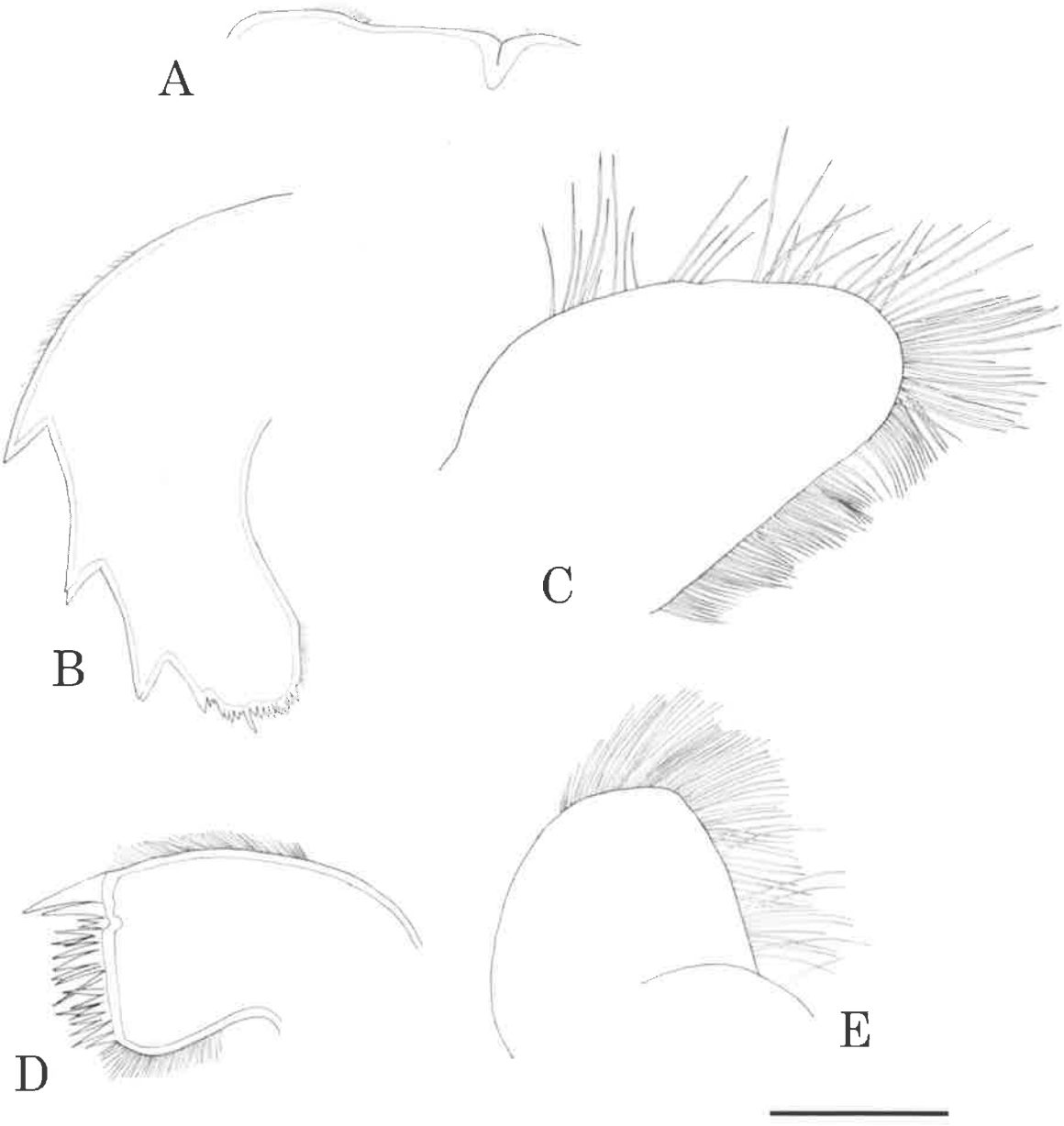


Fig. 4 Mouth parts of *Xenobalanus globicipitis*, from the killer whale (*Orcinus orca*).
A. labrum, B. mandible, C. palp, D. maxilla I, E. maxilla II. Scale bar=0.5mm.

gar fish (*Lepidosteus*) or mammals (whale, manatee and dugong), and are regarded as obligate commensal organisms [3]. However, it has been suggested that settlement of *X. globicipitis* and other cirripedian groups (the genera *Lepas and Conchoderma*: Lepadidae) on dolphins might increase because of reduced movement and/or impaired regenerative and immune functioning of the skin prior to death [15]. The whale lice species seem to be omnivorous and eat both fibrous algae and the cutaneous scales of their hosts; they are burrowers and penetrate the horny layer of the hosts' epidermis and/or cracks between sessile barnacles [1]. However, it is unknown if they could be carriers or vectors of micropathogens to whale hosts. Hence, monitoring of such cirripedian and amphipodian species is needed, especially for hosts under captive conditions.

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要　　約

紀伊半島沖で捕獲されたシャチ *Orcinus orca*1 個体（成熟雄）の体表から甲殻類２種（フジツボ類［蔓脚下綱］１個体およびクジラジラミ類［軟甲綱］22 個体）が得られた。本研究では，約 20 年間にわたり保存されていたこれら標本について，形態学的に検討した。その結果，フジツボ類はエボシフジツボ *Xenobalanus globicipitis*（Coronulidae）と同定された。本種は日本含め世界各地のクジラ類で報告があるが，シャチでは初記録となった。一方，クジラジラミ類は，*Cyamus* 属であったが，未成熟であったため種の同定はできなかった。クジラ類の着生生物は片利共生体（例えば便乗 phoresy など）であるが，地中海のイルカ類では *X. globicipitis* およびエボシガイ類（*Lepas* および *Conchoderma*: エボシガイ科）の寄生個体数は，イルカ類の遊泳速度減少により有意に上昇し，特に致死直前に顕著になるという。よって，外部寄生虫の種（標本の保存），寄生数，寄生部位，同部の病変などの記録は，健康管理上のデータの一部として活用されるであろう。

キーワード：シャチ，*Xenobalanus globicipitis*，*Cyamus* sp.

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