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JBG Power GmbH

株式会社 JBG エナジー

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広島県竹原市「ハチの干潟」の生物多様性の保全に関する要望書

広島県竹原市の地先に広がる「ハチの干潟」は、海浜性生物の種の多様性が著しく高く、絶滅危惧種をはじめとする希少種も多数棲息する、極めて貴重な干潟です。環境省によって、2015年には「生物多様性の観点から重要度の高い湿地（略称「重要湿地」）」に選定されており、さらに、2016年には、この干潟の周辺海域が「大崎上島北」として「生物多様性の観点から重要度の高い海域（略称「重要海域」）」にも指定されています。

本年5月、貴社がこの干潟の西端に液化天然ガス（LNG）火力発電所とLNG貯蔵施設を建設する計画を進めていることが明らかとなりましたが、この計画がそのまま実施された場合、この干潟の自然環境と生物多様性が大きく損なわれることが予想されます。世界的にも比類のないこの重要湿地が現在のまま存続することができるよう、一旦事業の進行を取りやめて科学的に妥当な環境影響評価を実施し、その結果を公開して第三者の評価を仰ぎ、生物多様性への影響が予測された場合には計画を再考または中止していただくよう、強く要請いたします。

「ハチの干潟」とその周辺海域には、最も絶滅のおそれが高い絶滅危惧Ⅰ類として環境省レッドリスト2020または環境省海洋生物レッドリスト2017に掲載された種が少なくとも15種、次に絶滅のおそれが高い絶滅危惧Ⅱ類として掲載されたものが少なくとも18種、準絶滅危惧種として掲載されたものが少なくとも37種棲息していることが、広島大学や岡山大学等の研究者によって明らかにされています（添付資料表参照）。この中には、「ハチの干潟」をタイプ産地として新種記載されたもの（セトウチドクチュムシ）も含まれています。絶滅危惧Ⅰ類の生物の中には、生きた化石と呼ばれ、この干潟が世界最北の分布地となるカブトガニとその共生種であるカブトガニウズムシ、死殻は各地の干潟で見つかるものの生貝が棲息する場所はもはやこの干潟を含む2~3箇所しかなく、干潟に棲息する二枚貝の中で最も絶滅が危惧されるイセシラガイとオキナノエガオなど、世界的に見ても極めて貴重な生物たちが含まれています。環境省のレッドリストには掲載されていないものの、広島

県レッドデータブック 2011 に掲載された生物 5 種も生息しています(添付資料表参照)。そのうち、スナメリの生息場所は「スナメリクジラ廻游海面」として国指定の天然記念物となっています。

かつての瀬戸内海には、このハチの干潟に匹敵する自然度と生物多様性の極めて高い干潟が多数存在したと推察されますが、現在、そのほとんどは埋め立て、干拓、海域での人工構築物の設置や陸域の開発等によって消失するか往時の姿が失われてしまいました。ハチの干潟は、瀬戸内海の沿岸生物のかつての豊穡な多様性がよく残されている数少ない場所の一つであり、日本の沿岸生物の多様性保全の観点から最も重要な保全対象地域の一つと言えます。そのため、ハチの干潟とその周辺の海域は、冒頭に記したように環境省によって「重要干潟」と「重要海域」に指定されているわけです。この高い生物多様性に注目した国内外の多くの研究者がここを訪れ、研究教育活動を継続しています。広島大学をはじめ、国立科学博物館、北海道大学、京都大学、岡山大学、高知大学、九州大学、国立米子工業高等学校、ドイツの Alfred Wegener Institute などの教育機関の研究教育の場となっており、この干潟の生物を扱った学術論文は近年だけでも 20 編以上が出版され、我が国の海洋生物学研究の大きな財産となっています。また、ハチの干潟は、地域社会の環境教育の場として、広島県や竹原市などによって頻繁に活用されてきた場所でもあります。

中国新聞社等により公表された貴社の計画が実施された場合、この干潟と周辺海域に棲息する生物や生態系に、以下のような被害が発生することが予想されます。

- 1：建設途中で発生する砂泥等の巻き上がりや陸地から海域への流出が、干潟を含む沿岸海域の生物の棲息場所や摂食活動に大きな影響を与える可能性がある。
- 2：建設途中で、外来海洋生物の移入手段として最もリスクが高い工事用台船等によって外来生物が持ち込まれ、絶滅危惧種を含む在来生物を減少させる可能性がある。
- 3：「火力発電所の冷却水はクローズドシステムとする」とだけ公表されているが、永久に同一の冷却水を使用するとは考えられない。海域に廃棄された場合、腐蝕防止剤等の汚染物質が水生生物に悪影響を与える可能性がある。
- 4：500 m もの棧橋と LNG 貯蔵施設となる浮体物を設置した場合、沿岸流の流量や流向が変化し、わずかな変化であっても干潟の侵食や砂泥質土壌の粒度組成の変化が生じ、そこに棲息する生物たちに大きな影響を及ぼす可能性が高い。特に、カブトガニの産卵地は底質が限定されており、大きな影響を受ける可能性が極めて高い。
- 5：水深 7 m ～ 15 m の浅海域に、喫水が 5 m 以上と想定される浮体式の LNG 貯蔵基地を設置し、喫水が 15 m 以上と想定される LNG 運搬船が寄港するには干潟の沖数百メートルでの大規模な浚渫が不可避であり、上記と同様の沿岸流の変化が生じて干潟生態系に大きな影響を与える可能性が高い。
- 6：LNG 運搬船によって海外から直接外来海洋生物が自然度の高い海域に持ち込まれ、在来生態系を大きく改変する可能性がある。
- 7：LNG 運搬船による座礁等の海難事故が生じた場合、干潟生態系に甚大な被害が発生する可能性がある。

しかるに、この計画（建設予定の火力発電所の出力：74,000 kw）は、国の環境影響評価法と広島県の環境影響評価条例のいずれにおいても環境影響評価を行う基準（国の環境影響評価法の第 2 種事業では 112,500 kw 以上、広島県条例では 75,000 kw 以上）に該当しないため、上記のような希少

な干潟の自然環境と貴重かつ豊穡な生物多様性、特に数多くの絶滅危惧種に及ぶ影響が調査・評価されておらず、「生物の多様性の確保及び自然環境の体系的保全に関しての配慮」が全くなされておられません。この状況は、本年6月に改正された「瀬戸内海環境保全特別措置法」で干潟の保全が強調されたことに逆行するものであり、看過することはできません。

私たちは、ハチの干潟と周辺の海域が、日本にとどまらず世界的に見ても沿岸生物の多様性保全の点で極めて重要であることを鑑み、貴社に対し、以下の4点を強く要望いたします。

- (1) 一旦事業の進行を中止して、絶滅危惧種や希少種への影響を検討するための科学的に妥当な環境影響評価を実施すること。
- (2) その結果を公開して、第三者として、海岸工学、流体力学、保全生物学、底生生物学、プランクトン学等の専門家の判断を仰ぐこと。
- (3) その環境影響評価の結果、ハチの干潟とその周辺海域に棲息する生物への影響が予測された場合、計画を変更してその影響を回避する方策を講じるか、回避できない場合には計画そのものを中止すること。
- (4) 上記の要望3点に関する貴社のお考えを、書面にて、早急にご連絡いただくこと。

以上

この要望書に関する連絡先

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September 9, 2021

Mr. Peter GERSTMANN,
Managing Director,
JBG Power GmbH and JBG Energy Japan
Kurfürstendamm 52,
10707 Berlin,
GERMANY.

**Request for conservation of the biodiversity in tidal flats at Hachi-no-higata, Takehara City,
Hiroshima Prefecture, Japan**

Dear Mr. GERSTMANN,

The decrease in natural tide flats and decline in the biodiversity of coastal organisms that live in these habitats have been accelerated during the last 50 years in Japan. A large number of these organisms are endangered or have been made extinct in many of the tidal flat areas.

The tidal flats at Hachi-no-higata in Takehara City, Hiroshima Prefecture, Japan (facing the Seto Inland Sea) have miraculously maintained rich natural tidal flat environments, and thus Hachi-no-higata is one of the most significant hot spots for the conservation of the biodiversity of coastal organisms in Japan. More than 70 species — listed in the latest Red List issued by the Japanese Ministry of the Environment (2020), and latest Red Data Book of Hiroshima Prefecture (2011) — currently inhabit the tidal flats or the adjacent sea areas: among them, 16 species are designated as critically endangered or endangered, 19 as vulnerable, and 39 as near-threatened. The IUCN (International Union for the Conservation of Nature) Horseshoe Crab Specialist Group maintains that the Hachi-no-higata is a very important habitat, particularly because it represents the northernmost and easternmost distribution limit of the crab species *Tachypleus tridentatus*, which has been classified as endangered by the IUCN not only in Japan, but in the world. In line with the significance for the conservation of biodiversity, the tidal flats and neighboring waters have been included by the Japanese Ministry of the Environment among the Important Wetlands with High Biodiversity, and Important Marine Areas with High Biodiversity, respectively. (<http://www.env.go.jp/en/nature/biodic/kaiyo-hozen/kaiiki/index.html>).

Because of its rich biodiversity, Hachi-no-higata attracts both domestic and foreign researchers from prestigious institutions such as the universities of Hiroshima, Hokkaido, Kyoto, Okayama, Kochi, Kyusyu, the Japanese National Museum of Nature and Science, and the Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung. Over 20 scientific studies investigating this ecosystem have been recently published.

Additionally, Hachi-no-higata has been designated by administrative bodies of Hiroshima Prefecture and Takehara City as a destination for students and local people to learn and appreciate the environmental dynamics of the tidal flats and its neighboring seas.

The site for the LNG power plant, recently proposed by your companies, is adjacent to the tidal flats, and the massive sea-based facilities that are to be constructed have the potential to disrupt the natural equilibrium in this region, producing the following negative impacts on the delicate tidal flat ecosystem and on its many endangered organisms:

- 1: The discharge and accumulation of sand, mud, silt and hazardous substances during the construction will impede the feeding and reproductive activities of marine organisms, leading to a decrease in their populations.
- 2: Marine non-indigenous invasive organisms will be introduced via hull-fouling occurring on ocean-going LNG carriers and coastal barges that will visit the area during construction operations, and this will decrease the populations of indigenous threatened organisms through competitive exclusion or predation.
- 3: The discharge of cooling water, if any, which is used in the closed cooling system and will contain hazardous substances, has negative effects on the endangered organisms.
- 4: The ocean-going LNG carriers, with their lengths of ca. 250 m, the LNG floating storage barge, which is 120 m long and 50 m wide, and the landing piers with lengths of over 500 m, will most likely change the direction and volume of tidal streams, coastal flows and discharge from the Kamogawa River, which flows into Hachi-no-higata. As a result, this will cause a severe loss of the balance between the erosion and deposition of sand, mud and silt on the tidal flats, as well as changes in the composition of grain size in the tidal flat substrata, which will inevitably affect the distribution and density of organisms living on and in the tidal flats. For instance, siltation on the substrata will decrease the number or area of spawning sites for horse shoe crabs, which lay eggs on a restricted substratum consisting of sand with a grain size (diameter) between 0.4 and 1.0 mm.
- 5: Mooring of the huge LNG carriers and storage barge in the shallow coastal area will inevitably cause frequent dredging, resulting in the loss of balance between the erosion and deposition of sand, mud and silt on the tidal flats.
- 6: The potential occurrence of marine accidents, such as grounding of the carriers, will severely damage the shallow water ecosystems, including Hachi-no-higata and the adjacent sea areas.

Nevertheless, your companies' construction works are about to be started without a proper environmental impact assessment.

We would strongly urge you to consider that

- 1: scientifically valid environmental impact assessment should be conducted to thoroughly evaluate the impacts of this construction on many endangered and rare species,
- 2: the results of the assessments should be disclosed and evaluated by specialists from a variety of fields, including coastal engineering, hydraulics, conservation biology, benthology and planktology, and
- 3: this plan should be reconsidered or cancelled, if detrimental effects on endangered and rare species are confirmed as likely.
- 4: you should respond to our requests in writing as soon as possible.

We would expect you to exercise your own judgment while considering the challenge of preserving the precious biodiversity of the Hachi-no-higata tidal flats and adjacent sea areas. We believe that an objective judgment on this matter will lead to the correct decision, in line with the current international policy of Sustainable Development Goals (SDG's).

Sincerely,

Keiji IWASAKI, Chairperson of the Committee for the Conservation of Biodiversity, the Malacological Society of Japan, Professor of Nara University, Dr.

Yuji ANKEI, Chairperson of the Committee for Conservation for the Natural Environments, the Society for the Study of Molluscan Diversity, Professor Emeritus of Yamaguchi Prefectural University, Dr.

Dai NAGAMATSU, President of the Chugoku-Shikoku Branch of the Ecological Society of Japan, Professor of Tottori University, Dr.

Gento SHINOHARA, President of the Ichthyological Society of Japan, Senior Curator of the National Museum of Nature and Science, Dr.

Shinichi SATO, Chairperson of the Committee for Conservation of Natural Environment, The Japanese Association of Benthology, Professor of Shizuoka University, Dr.

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Enclosed: Photographs of tidal flats at Hachi-no-higata, and a list and photographs of threatened species living in the tidal flats.

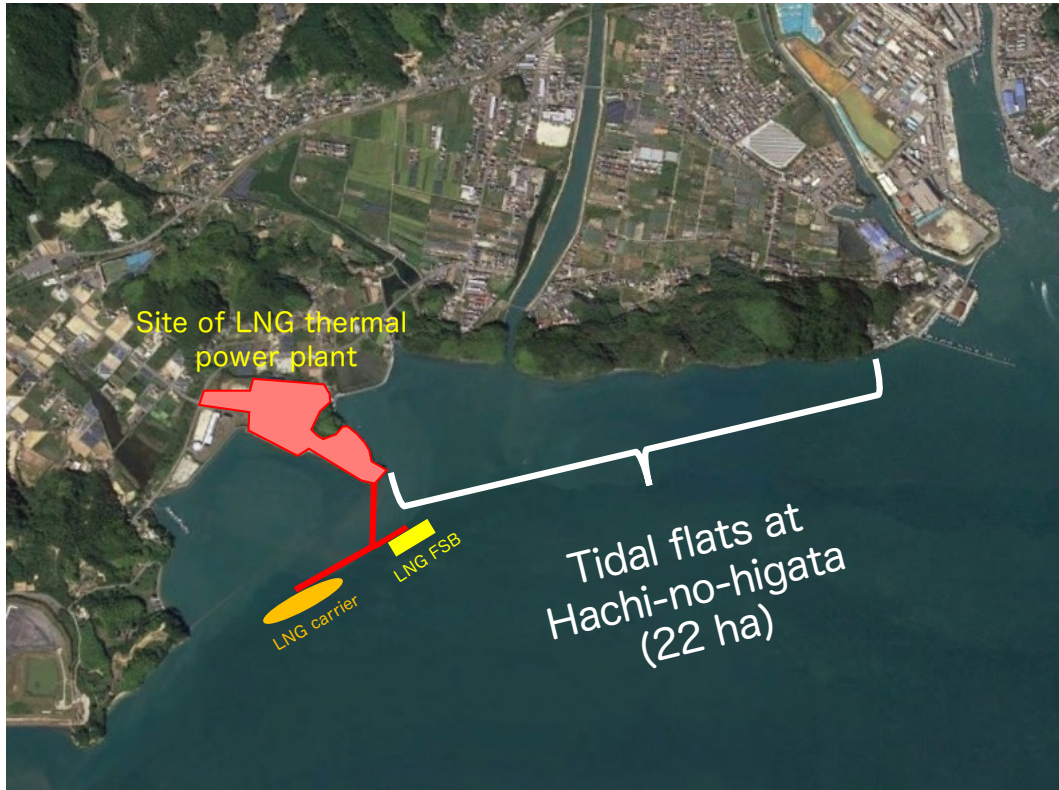
Reference material



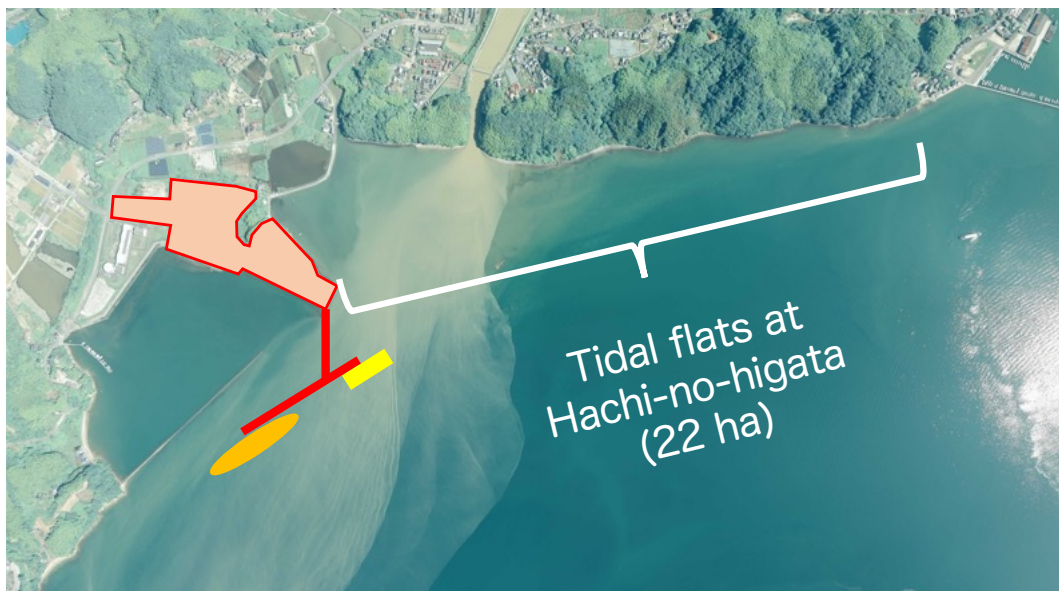
Phot 1 Tidal flats at Hachi-no-higata (view from land).



Phot 2 Tidal flats at Hachi-no-higata (view from Hachi-iwa reef).



Phot 3 Planned locations for LNG thermal power plant, landing piers, LNG carrier and LNG floating storage barge (FSB) (drawing on an aerial photography from Google Earth).



Phot 4 Planned locations for LNG thermal power plant, landing piers, LNG carrier and LNG floating storage barge (FSB) (drawing on an aerial photography, courtesy of Geospatial Information Authority of Japan).

Table 1. Threatened animals living in or near the Hachi-no-higata Tidal Flats and listed in the Red List 2020 of the Japanese Ministry of Environment (JMREL), Red List of Marine Organisms of JME (JMREL *), and Red Data Book 2011 of the Hiroshima Prefecture (HiroshimaRDB). CR+EN: critically endangered or endangered, VU: vulnerable, NT: near threatened, DD: Data Deficient, NA: need attention, ©: the species whose type locality is Hachi-no-higata. The species with underlined bold letters indicate that their photographs are in the reference material. The period of investigation from 2004 to 2020.

JMREL	HiroshimaRDB	Taxon	Scientific name
CR+EN	CR+EN	Fish	<i>Taeniooides cirratus</i> (Blyth, 1860)
CR+EN	NT	Fish	<i>Gymnoqobius scrobiculatus</i> (Takaqi, 1957)
CR+EN	—	Fish	<i>Anguilla japonica</i> Temminck & Schlegel, 1847
CR+EN	CR+EN	Horseshoe crab	<u><i>Tachypleus tridentatus</i> (Leach, 1819)</u>
CR+EN	NA	Lugworm	<i>Chaetopterus cautus</i> Marenzeller, 1879
CR+EN	—	Snail	<i>Paratectonatica tiqrina</i> (Röding, 1798) ○
CR+EN	—	Snail	<i>Reticunassa hiradoensis</i> (Pilsbry, 1904)
CR+EN	—	Snail	<u><i>Amathina tricarinata</i> (Linnaeus, 1767)</u>
CR+EN	—	Clam	<i>Teqillarca granosa</i> (Linnaeus, 1758) ○
CR+EN	—	Clam	<u><i>Pegophysema bialata</i> (Pilsbry, 1895)</u>
CR+EN	—	Clam	<i>Bornioopsis ariakensis</i> Habe, 1959
CR+EN	—	Clam	<i>Devonia semperi</i> (Ohshima, 1930)
CR+EN	—	Clam	<i>Platomysia rugata</i> Habe, 1951
CR+EN	—	Clam	<u><i>Basterotia gouldii</i> (A. Adams, 1864)</u>
CR+EN	CR+EN	Flatworm	<i>Ectoplana limuli</i> (Iijima & Kaburaki, 1916)
VU	—	Fish	<i>Pseudoqobius masago</i> (Tomiyama, 1936)
VU*	NT	Lancelet	<u><i>Branchiostoma japonicum</i> (Willey, 1897)</u>
VU	NT	Crab	<u><i>Uca lactea</i> (de Haan, 1835)</u>
VU	NA	Snail	<i>Cipangoaludina cf. laeta</i> (Martens, 1861)
VU	—	Snail	<i>Finella pupoides</i> A. Adams, 1860
VU	—	Snail	<i>Stosicia annulata</i> (Dunker, 1860)
VU	—	Snail	<i>Assimineidae</i> gen. sp.
VU	—	Snail	<u><i>Naticarius concinnus</i> (Dunker, 1860)</u>
VU	—	Snail	<u><i>Melanella tanahensis</i> Takano, Tanaka & Kano, 2019</u>
VU	—	Snail	<u><i>Mucronalia exilis</i> A. Adams, 1862</u>
VU	—	Snail	<i>Engina menkeana</i> (Dunker, 1860)
VU	—	Snail	<u><i>Syrnola tenuisculpta</i> (Lischke, 1872)</u>
VU	—	Snail	<u><i>Melanochlamys fukudai</i> Cooke, Hanson, Y. Hirano, Ornelas-Gatdula, Gosliner, Chernyushev & Valdés, 2014</u>
VU	—	Snail	<u><i>Cylichnatus yamakawai</i> (Yokoyama, 1920)</u>
VU	—	Clam	<u><i>Fragum carinatum</i> (Lyngø, 1909) ○</u>
VU	—	Clam	<i>Bornioopsis tsurumaru</i> Habe, 1959
VU	—	Clam	<u><i>Thracia concinna</i> Reeve, 1859</u>
VU	—	Clam	<u><i>Solen kikuchii</i> Cosel, 2002</u>
NT	NT	Fish	<i>Hyporhamphus intermedius</i> (Cantor, 1842)
NT	NT	Fish	<i>Periophthalmus modestus</i> Cantor, 1842
NT*	—	Spoon worm	<u><i>Sipunculus nudus</i> Linnaeus, 1766</u>
NT*	—	Spoon worm	<i>Siphonosoma cumanense</i> (Keferstein, 1867)
NT*	NT	Spoon worm	<u><i>Ikeda taeniooides</i> (Ikeda, 1904)</u>
NT*	—	Spoon worm	<i>Arhynchite hayaoi</i> Tanaka & Nishikawa, 2013 ©
NT*	—	Spoon worm	<i>Ikedosoma gogoshimense</i> (Ikeda, 1904)
NT	—	Snail	<i>Patelloida conulus</i> (Dunker, 1861)
NT	—	Snail	<u><i>Umbonium moniliferum</i> (Lamarck, 1822)</u>
NT	—	Snail	<i>Plesiothyreus</i> sp.
NT	—	Snail	<i>Batillaria multiformis</i> (Lischke, 1869)
NT	—	Snail	<u><i>Vitrinella</i> sp.</u>
NT	—	Snail	<u><i>Nozema ziczac</i> (H. Fukuda & Ekawa, 1997)</u>
NT	—	Snail	<i>Voorwindia cf. paludinooides</i> (Yokoyama, 1927)
NT	—	Snail	<i>Cryptonatica adamsiana</i> (Dunker, 1860)
NT	—	Snail	<i>Eunaticina papilla</i> (Gmelin, 1791)
NT	—	Snail	<i>Gennaosinum bathyraphe</i> (Pilsbry, 1911)
NT	—	Snail	<i>Nassarius livescens</i> (Philippi, 1849)
NT	—	Snail	<i>Hemifusus tuba</i> (Gmelin, 1791) ○
NT	—	Snail	<u><i>Pyrquolina shigevasui</i> (Yokoyama, 1927)</u>
NT	—	Snail	<i>Tiberia dunkeri</i> (Dall & Bartsch, 1906)
NT	—	Snail	<u><i>Turbonilla scrobiculata</i> Yokoyama, 1922</u>
NT	—	Snail	<i>Turbonilla kuraenohamana</i> Hori & H. Fukuda, 1999
NT	—	Snail	<u><i>Turbonilla teganumana</i> Yokoyama, 1922</u>
NT	—	Snail	<i>Laemodonta exaratooides</i> Kawabe, 1992
NT	—	Clam	<u><i>Solemya pusilla</i> Gould, 1861</u>
NT	—	Clam	<i>Atrina japonica</i> (Reeve, 1858)
NT	—	Clam	<u><i>Pinna attenuata</i> Reeve, 1858</u>
NT	—	Clam	<u><i>Mactrotoma angulifera</i> (Reeve, 1854)</u>
NT	—	Clam	<i>Nipponomysella subtruncata</i> (Yokoyama, 1927)
NT	—	Clam	<u><i>Peregrinamor ohshimai</i> Shōji, 1938</u>
NT	—	Clam	<i>Pseudoqaleomma japonica</i> (A. Adams, 1862)
NT	—	Clam	<i>Coecella chinensis</i> (Deshayes, 1855)
NT	—	Clam	<u><i>Nitidotellina hokkaidoensis</i> (Habe, 1961)</u>
NT	—	Clam	<u><i>Nitidotellina minuta</i> (Lischke, 1872)</u>
NT	—	Clam	<u><i>Solen roseomaculatus</i> Pilsbry, 1901</u>
NT	—	Clam	<i>Mya japonica</i> Jay, 1857
DD	—	Snail	<u><i>Dolicrossea</i> sp.</u>
—	CR+EN	Whale	<i>Neophocaena phocaenoides</i> (G. Cuvier, 1829)
—	VU	Fish	<i>Ammodytes personatus</i> Girard, 1856
—	NT	Sea cucumber	<i>Oestergeria dubia</i> (Semper, 1867)
—	NT	Crab	<i>Ocypode stimsoni</i> Ortmann, 1897
—	NA	Shrimp	<i>Laomedea astacina</i> De Haan, 1849

Photos of threatened animals living on or in tidal flats at Hachi-no-higata (No. 1).
 CR + EN: critically endangered or endangered by the Red List 2020 of
 the Japanese Ministry of Environment.



Photo 5 Horse shoe crab
Tachypleus tridentatus (CR+EN)



Photo 6 Nassariid snail *Reticunassa hiradoensis* (CR+EN)



Photo 7 Amathinid snail *Amathina tricarinata* (CR+ EN)



Photo 8 Lucinid clam *Pegophysema bialata* (CR+EN)



Photo 9 Lasaeid clam *Borniopsis ariakensis* attached to a sea cucumber



Photo 10 Lasaeid clam *Borniopsis ariakensis* (CR+EN)



Photo 11 Lasaeid clam *Devonia semperi* (CR+EN) attached to a sea cucumber



Photo 12 Lasaeid clam *Devonia semperi* (CR+EN)

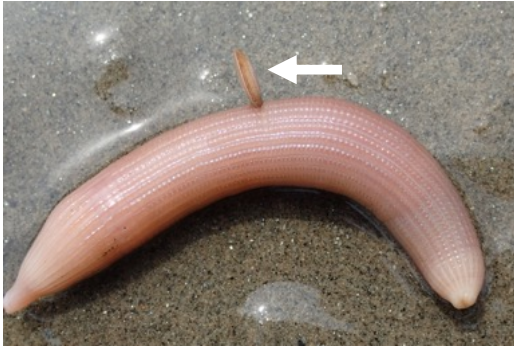


Photo 13 Lasaeid clam *Platomyia rugata* (CR+EN) attached to a sipunculid worm



Photo 14 Lasaeid clam *Platomyia rugata* (CR+EN) attached to a sipunculid worm

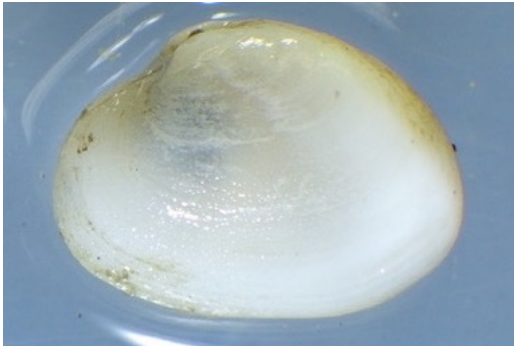


Photo 15 Basterotiid clam *Basterotia gouldi* (CR+EN)



Photo 16 Branchiostomid lancelet *Branchiostoma japonicum* (VU)



Photo 17 A crowd of the fiddler crab *Uca lactea* (VU)



Photo 18 Scaliolid snail *Finella pupoides* (VU)

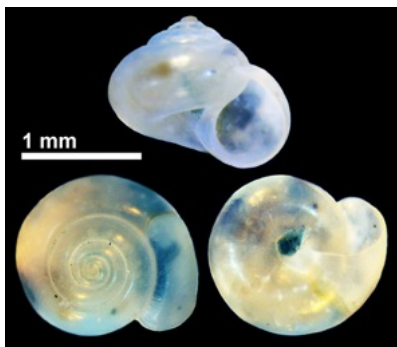


Photo 19 Assimineid snail Assimineidae gen. sp. (VU)



Photo 20 Naticid snail *Naticarius concinnus* (VU)

Photos of threatened animals living on or in tidal flats at Hachi-no-higata (No. 3).
VU: vulnerable by the Red List 2020 of the Japanese Ministry of Environment.

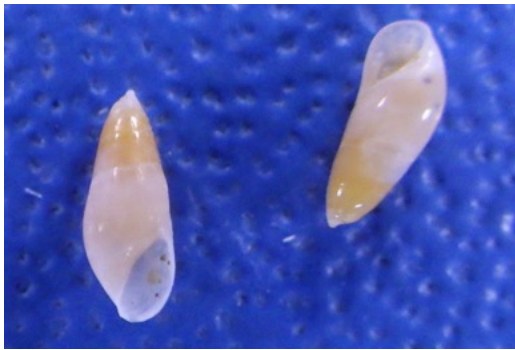


Photo 21 Eulimid snail *Melanella tanabensis* (VU)



Photo 22 Eulimid snail *Mucronalia exilis* (VU)



Photo 23 Pyramidellid snail *Syrnola tenuisculpta* (VU)



Photo 24 Aglagicid sea slug *Melanochlamys fukudai* (VU)



Photo 25 Cylichnid snail *Cylichnatys yamakawai* (VU)



Photo 26 Lasaeid clam *Borniopsis tsurumaru* (VU)



Photo 27 Lasaeid clam *Borniopsis tsurumaru* (VU)



Photo 28 Cardiid clam *Fragum carinatum* (VU)

Photos of threatened animals living on or in tidal flats at Hachi-no-higata (No. 4).
VU: vulnerable, NT: near threatened by the Red List 2017 for Marine Organisms
and Red List 2020 of the Japanese Ministry of Environment.



Photo 29 Thraciid clam *Thracia concinna* (VU)



Photo 30 Solenid bivalve *Solen kikuchii* (VU)



Photo 31 Proboscis of Sipunculid worm
Ikeda taenioides (NT)



Photo 32 Trochid snail *Umboonium moniliferum* (NT)

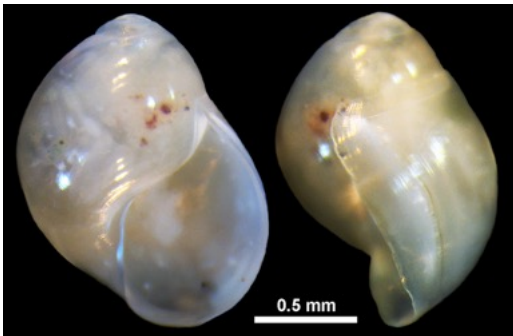


Photo 33 Tornid snail *Vitrinella* sp. (NT)



Photo 34 Elachisinid snail *Nozema ziczac* (NT)



Photo35 Pyramidellid snail *Pyrgulina shigeyasui* (NT)



Photo 36 Pyramidellid snail *Turbonilla scrobiculata* (NT)

Photos of threatened animals living on or in tidal flats at Hachi-no-higata (No. 5).
 NT: near threatened by the Red List 2020 of the Japanese Ministry of Environment.



Photo 37 Pyramidellid snail *Turbonilla teganumana* (NT)



Photo 38 Mactrid bivalve *Mactrotoma angulifera* (NT)



Photo 39 Solemyd bivalve *Solemya pusilla* (NT)



Photo 40 Solemyd bivalve *Solemya pusilla* (NT)



Photo 41 Pinnid bivalve *Pinna attenuate* (NT)



Photo 42 Pinnid bivalve *Pinna attenuate* (NT)



Photo 43 Lasaeid bivalve *Peregrinamor ohshimai* (NT) symbiotic with a mud shrimp



Photo 44 Solenid bivalve *Solen roseomaculatus* (NT)

Photos of threatened animals living on or in tidal flats at Hachi-no-higata (No. 6).
NT: near threatened by the Red List 2020 of the Japanese Ministry of Environment.

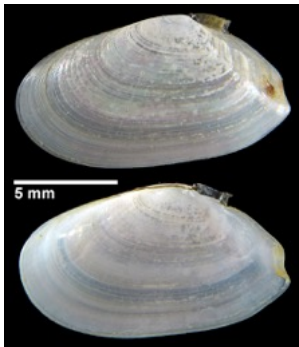


Photo 45 Tellinid clam *Nitidotellina minuta* (NT)



Photo 46 Solenid clam *Solen roseomaculatus* (NT)

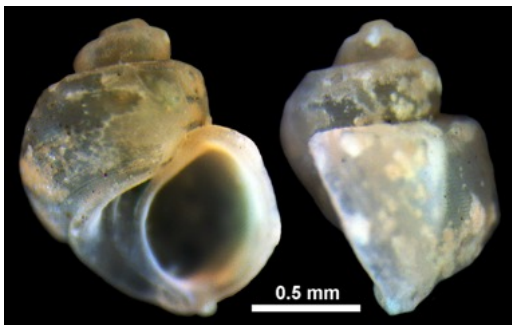


Photo 47 Elachisinid snail *Dolicrosesea* sp. (DD)

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