HOKKAIDO UNIVERSITY

Title	The Fauna of Akkeshi Bay : VI. Pisces
Author(s)	SATO, Shin-ichi
Citation	北海道帝國大學理學部紀要, 6(1), 13-34
Issue Date	1937-08
Doc URL	http://hdl.handle.net/2115/27008
Type	bulletin (article)
File Information	6(1)_P13-34.pdf

Instructions for use

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

The Fauna of Akkeshi Bay
VI. Pisces

By

Shin-ichi Sato

Zoological Institute, Faculty of Science, Hokkaido
Imperial University, Sapporo

While studying the fishes from the ecological and taxonomical points of view in the waters adjacent to Akkeshi Bay, on the northwestern shores of the Pacific in Hokkaido, since 1934, a collection of considerable size has been accumlated. The specimens have been obtained in the bay and lake mainly by the author himself by hauling the net and setting the long-line, or, partially they have been brought by fishermen caught in the set net prepared for herrings, salmon and other fishes of commercial value; some were from the waters of about 30–100 fathoms depth, off Daikoku Island in the open Pacific. In addition some preserved specimens in the Akkeshi Marine Biological Station were also examined. There has not been found any species new to science. However, it is interesting to observe the ichthyofauna in this part of Hokkaido, inasmuch as, off Akkeshi, two distinct currents meet, the cold current coming from the Bering Strait along the Kuriles and partly from around the Okhotsk coast and the warm Kuroshiwo from the south, each with its own faunal elements.

The author considers it desirable for its commercial value to give the fishing season in addition to the known locality of the fishes.

The classification and arrangment of the list follow mainly the "Catalogue of the Fishes of Japan" edited in 1913 by Prof. D. S. Jordan, S. Tanaka and J. O. Snyder, and partly the "Record of the Fishes obtained by D. S. Jordan in 1922" edited in 1925 by Prof. D. S. Jordan and C. L. Hubbs. "On the Distribution of Fishes in Japanese Waters" edited in 1931 by Dr. S. Tanaka was available for the study of the distribution.

Speaking of the distribution of 99 species of fishes, excepting 6 which are not decided yet, 68 species are northern forms, 17 species are fishes found throughout Japan while 5 species are southern fishes. Therefore most of them belong rather to the northern fishes of Japan. Three species, which have been recognized hitherto as fresh water fish, were also found in the brackish waters (see Table I).

TABLE I

Faunal area of Fishes	Number of Species
Marine fish from southern Japan	5
,, ,, ,, northern Japan	68
,, ,, ,, all Japan	17
Fresh water fish from southern Japan	0
,, ,, ,, ,, northern Japan	2
,, ,, ,, ,, all Japan	1

The author wishes to express here his particular obligation to Dr. T. Inukai, Hokkaido Imperial University, under whose guidance and criticism this work has been done. He is indebted also to Dr. T. Uchida for his kind criticism. Valuable aid was also given by Mr. Y. Hada, a staff member of the Akkeshi Marine Biological Station, who helped in the collection in many ways and allowed access to some specimens preserved in the station.

Family Galeidae

1. ***Prionace glauca*** (LINNAEUS)

Nom. Jap. Yoshikiri.

Common in the waters off the bay, mainly in summer, observed only.

Distrib.—Europe; Brazil; San Francisco; New Zealand; Indian Seas; Japanese waters.

Family Sphyrnidae

2. ***Sphyrna zygaena*** (LINNAEUS)

Nom. Jap. Shumoku-zame.

Very rare, occurring off the bay in summer, observed only.

Distrib.—Found in all warm seas; southern area of Japanese waters, as far northward as Tokyo.

Family Lamnidae

3. ***Isulus glaucus*** (MÜLLER & HENLE)

Nom. Jap. Ao-zame.

Rather scarce, occurring off the bay in summer, observed only.

Distrib.—Southern area of Japanese waters, rather common Nagasaki.

4. *Lamna* nasus (BONNATERRE)

Nom. Jap. Rakuda-zame.

Common in the waters off the bay, mainly in summer, observed only.

Distrib.—Common in Europe and on the coast of southern Alaska, southward to California; northern area of Japanese waters.

Family Cetorhinidae

5. *Cetorhinus maximus* (GUNNER)

Nom. Jap. Baka-zame.

Very rare, occurring off the bay in summer, observed only.

Distrib.—Arctic Seas; northern area of Japanese waters.

Family Squalidae

6. *Squalus suckleyi* (GIRARD)

Nom. Jap. Abura-zame.

Common in the waters off the bay and frequently in the bay, mainly in summer and late autumn.

Distrib.—From Aleutian and Commander Islands southward to southern end of California and in northern part of Japan.

Family Rajidae

7. *Raja isotrachys* GÜNTHER

Nom. Jap. Soko-gangiei.

Not so common, occurring off the bay in autumn and winter.

Distrib.—Northern area of Japanese waters, from Muroran south to Kesennuma (Miyagi).

Family Nemichthydae

8. *Nemichthys avocetta* JORDAN & GILBERT

Nom. Jap. Shigi-unagi.

Very rare; one specimen preserved at Akkeshi M. B. Station, exact locality and date not given.

Distrib.—Puget Sound and Beacon Hill, on the west coast of America; probably in northern area of Japanese waters.

Family Clupeidae

9. *Sardinia melanosticta* (TEMMINCK & SCHLEGEL)

Nom. Jap. Ma-iwashi.

Abundant, occurring in and off the bay in summer and early autumn.

Distrib.—Throughout Japanese waters, from Kyushu and Korea north to Hokkaido.

10. *Clupea pallasii* CUVIER & VALENCIENNES

Nom. Jap. Nishin.

Abundant, occurring in the bay and lake, mainly in spring and summer, frequently found in the lake in winter.

Distrib.—Northern area of Japanese waters; eastern coasts of North Pacific to southern California.

Family Engraulidae

11. *Engraulis japonicus* TEMMINCK & SCHLEGEL

Nom. Jap. Katakuchi-iwashi.

Not very common, occasionally found in and off the bay in summer.

Distrib.—Throughout Japanese waters, from Korea and Kyushu north to Saghalien.

Family Salmonidae

12. *Oncorhynchus nerka* (WALBAUM)

Nom. Jap. Beni-masu.

Rather scarce, occurring off the bay in summer.

Distrib.—North Pacific, along the coast of Alaska south to Oregon, and along the coasts of Kamchatka southward to northern part of Japan.

13. *Oncorhynchus keta* (WALBAUM)

Nom. Jap. Sake.

Common in and off the bay in summer and autumn, frequently found also in the lake in late autumn and winter.

Distrib.—North Pacific, from San Francisco to Bering Strait, Kamchatka, northern part of Japan.

14. *Oncorhynchus gorbuscha* (WALBAUM)

Nom. Jap. Karafuto-masu.

Common in and off the bay in summer.

Distrib.—North Pacific, from Oregon to Kamchatka and northern area of Japanese waters south to Hokkaido.

15. *Oncorhynchus masou* (BREVOORT)

Nom. Jap. Masu.

Very common, occurring off the bay, frequently found in the bay and lake in summer.

Distrib.—Nothern area of Japanese waters, along the coasts of northern part of Honshu and Hokkaido.

16. *Hucho perryi* (BREVOORT)

Nom. Jap. Itō.

Not very common, occurring in the bay and lake in late autumn and winter.

Distrib.—Northern part of Japan, from Aomori north to Saghalien.

17. *Salvelinus leucomaenis* (PALLAS)

Nom. Jap. Ame-masu.

Common in the lake and bay, rather constantly found.

Distrib.—Kamchatka; northern area of Japanese waters, from Kurile Islands south to Shinano.

Family Osmeridae

18. *Osmerus dentex* STEINDACHNER

Nom. Jap. Kyuri-uwo.

Common in the lake and bay in late spring and summer.

Distrib.—Coast of Alaska; Bering Sea; Kamchatka; northern area of Japanese waters, south to Hokkaido; northern China.

19. *Spirinchus lanceolatus* (HIKITA)

Nom. Jap. Shishamo.

Not very common, occurring in the lake and bay in late autumn.

Distrib.—Hokkaido.

20. *Hypomesus japonicus* (BREVOORT)

Nom. Jap. Chika.

Common in the lake and bay, mainly in early spring and late autumn and winter.

Distrib.—Northern area of Japanese waters, probably northward to Kamchatka.

Family Salangidae

21. *Salangichthys microdon* (BLEEKER)

Nom. Jap. Shira-uwo.

Common in the lake in spring, frequently in the bay too.

Distrib.—Throughout Japanese waters, from Kyushu north to Saghalien.

Family Cyprinidae

22. *Leuciscus hakonensis* GÜNTHER

Nom. Jap. Ugui.

Common in the lake and bay, constantly found.

Distrib.—Throughout Japanese waters, from Kyushu north to Saghalien.

Family Synaphobranchidae

23. *Synaphobranchus affinis* GÜNTHER

Nom. Jap. Hora-anago.

Common, occurring off the bay in winter.

Distrib.—Throughout Japanese waters, from Hokkaido southward to the Philippines.

Remarks. Tanaka ('31) has stated that the species is a synonym of *S. pinnatus* (GRONOW).

Family Gasterosteidae

24. *Gasterosteus aculeatus aculeatus* (LINNAEUS)

Nom. Jap. Itoyo, Hari-uwo.

Common in the lake and bay, rather constantly found.

Distrib.—Europe; Greenland; North America; Alaska; Bering Island; Kamchatka; northern area of Japanese waters.

25. *Pungitius pungitius* (LINNAEUS)

Nom. Jap. Ibara-tomiyo.

Rather scarce, frequently in the lake and bay in summer and autumn.

Distrib.—Circumpolar; Alaska; Bering Island; Kamchatka; northern part of Japan.

Family Hemirhamphidae

26. *Hyporhamphus sajori* (TEMMINCK & SCHLEGEL)

Nom. Jap. Sayori.

Scarce, exact locality and season not given.

Distrib.—Throughout Japanese waters, from Formosa northward to Hokkaido.

Family Scombresocidae

27. *Cololabis saira* (BREVOORT)

Nom. Jap. Sanma.

Not very common, occurring off the bay in summer and autumn.

Distrib.—Throughout Japanese waters, from Kyushu northward to Kurile Islands.

Family Scombridae

28. *Scomber japonicus* HOUTTUYN

Nom. Jap. Saba.

Not very common, occasionally in and off the bay in summer.

Distrib.—Hawaii; California; Atlantic; Philippine Islands; common in southern area of Japanese waters, northward to Saghalien.

29. *Thunnus thynnus* (LINNAEUS)

Nom. Jap. Maguro.

Common, occurring off the bay in summer, late autumn and winter.

Distrib.—Europe; Atlantic; Pacific coast of North America; Hawaii; throughout Japanese waters, from Formosa northward to Kurile Islands.

Family Trichiuridae

30. *Trichiurus japonicus* (TEMMINCK & SCHLEGEL)

Nom. Jap. Tachi-uwo.

Very rare, occasionally found in the waters off the bay in summer.

Distrib.—Southern area of Japanese waters, northward to Tokyo.

Remarks. Tanaka ('31) has described this species as synonymous to *T. haumela* (FORSKÅL).

Family Xiphiidae

31. ? *Xiphias gladius* LINNAEUS

Nom. Jap. Mekajiki.

Rare, one specimen offered from Akkeshi M. B. Station, exact locality and season not given.

Distrib.—Atlantic coasts on both sides; Hawaii; Japan; California.

Family Monacanthidae

32. *Cantherines modestus* (GÜNTHER)

Nom. Jap. Umazura-hagi.

Rare, one specimen offered from Akkeshi M. B. Station, exact

locality and season not given.

Distrib.—Southern area of Japanese waters, northward to Hokkaido.

Remarks. Tanaka ('31) has described this species as synonymous to *C. unicornu* (BASILEWSKY).

Family Ostraciidae

33. *Ostracion* sp.

Family Molidae

34. *Mola mola* (LINNAEUS)

Nom. Jap. Manbō.

Rather common, occurring off the bay in summer.

Distrib.—Throughout Japanese waters.

Family Scorpaenidae

35. *Sebastolobus macrochir* (GÜNTHER)

Nom. Jap. Kichiji.

Common, occurring off the bay, mainly in autumn and winter.

Distrib.—Northern area of Japanese waters, southward to Misaki (Sagami Bay).

36. *Sebastodes schlegelii* (HILGENDORF)

Nom. Jap. Kuro-mebaru.

Rather scarce, occasionally in and off the bay in summer.

Distrib.—Northern area of Japanese waters, southward to Nagasaki.

37. *Sebastodes steindachneri* (HILGENDORF)

Nom. Jap. Yanaginomai.

Common, occurring off the bay, mainly in winter.

Distrib.—Hokkaido.

38. *Sebastodes itinus* JORDAN & STARKS

Nom. Jap. Yanagi-mebaru.

Common, occurring off the bay, mainly in summer.
Distrib.—Northern area of Japanese waters, Hokkaido and northern part of Honshu.

39. *Sebastodes flammeus* JORDAN & STARKS

Nom. Jap. Sango-mebaru, Hi-mebaru.

Common, occurring off the bay in winter.
Distrib.—Northern area of Japanese waters, southward to Sagami.

40. *Sebastodes iracundus* JORDAN & STARKS

Nom. Jap. Ōsaga.

Common, occurring off the bay in autumn and winter.
Distrib.—Northern area of Japanese waters, Hokkaido southward to Shiogama.

41. *Sebastodes* sp.

42. *Sebastichthys trivittatus* (HILGENDORF)

Nom. Jap. Shima-soi.

Common, occurring off the bay in autumn and winter.
Distrib.—Northern area of Japanese waters, Hokkaido and Aomori.

Family Hexagrammidae

43. *Hexagrammos* sp.

44. *Hexagrammos octogrammus* (PALLAS)

Nom. Jap. Suji-ainame, Hagotoko.

Common in the bay, rather constantly found, frequently in the lake too.
Distrib.—Coast of Alaska; Aleutian Islands; Bering Island;

Kamchatka; northern area of Japanese waters, southward to Hokkaido.

45. *Hexagrammos lagocephalus* (PALLAS)

Nom. Jap. Usagi-ainame.

Common in and off the bay, mainly in summer and autumn.

Distrib.—Coast of Alaska; Bering Sea; northern area of Japanese waters, southward to Hokkaido.

46. *Pleurogrammus monopterygius* (PALLAS)

Nom. Jap. Hokke.

Scarce, occasionally found in the bay in summer.

Distrib.—Unalaska; Aleutian Islands; Bering Island; Vladivostok; northern area of Japanese waters.

Family Cottidae

47. *Hemilepidotus gilberti* JORDAN & STARKS

Nom. Jap. Yokosuji-kajika.

Common, occurring off the bay, mainly in autumn.

Distrib.—Northern area of Japanese waters, mainly in Saghalien and Hokkaido.

48. *Ceratocottus namiyei* JORDAN & STARKS

Nom. Jap. Oni-kajika.

Not very common, occasionally in and off the bay.

Distrib.—Northern area of Japanese waters, from Saghalien southward to Korea.

49. *Myoxocephalus raninus* JORDAN & STARKS

Nom. Jap. Gisu-kajika.

Very common, occurring in the lake and bay, rather constantly found, and also off the bay, mainly in autumn and winter.

Distrib.—Northern area of Japanese waters, from Saghalien south to the coast of Rikuchu.

50. ? *Myoxocephalus stelleri* TILESIUS

Nom. Jap. Mokajika.

Not very common in the lake and bay, exact season not given.

Distrib.—Petropavlovsk, Kamchatka; Bering Is.; Mendi Is.; Mouth of Amur; Vladivostok; Saghalien.

51. *Ainocottus ensiger* JORDAN & STARKS

Nom. Jap. Yari-kajika, nabekowashi.

Rather common in and off the bay and in the lake in summer and autumn.

Distrib.—Hokkaido.

52. *Argyrocottus zanderi* HERZENSTEIN

Nom. Jap. Itohiki-kajika.

Common in the bay, occasionally found also in the lake, rather constantly found.

Distrib.—Saghalien; Iturup Is. (Kurile Islands).

53. *Gymnocanthus herzensteini* JORDAN & STARKS

Nom. Jap. Tsumaguro-kajika.

Not very common, probably off the bay.

Distrib.—Northern area of Japanese waters, southward to Toyama Bay.

54. *Blepsias draciscus* JORDAN & STARKS

Nom. Jap. Isoba-tengu, Sachiko.

Very common in the bay, constantly found, frequently in the lake too.

Distrib.—Northern area of Japanese waters, southward to Aomori.

55. *Hemitripterus villosus* (PALLAS)

Nom. Jap. Tōbetsu kajika.

Common in and off the bay in summer, occasionally in the lake too.

Distrib.—Alaska; Kamchatka; northern area of Japanese waters, from Saghalien southward to Matsushima Bay.

Family Agonidae

56. *Percis japonica* (PALLAS)

Nom. Jap. Inu-gochi.

Very rare, one specimen offered from Akkeshi M. B. Station, exact locality and date not given.

Distrib.—Avatcha Bay, Kamchatka; Okhotsk Sea; northern area of Japanese waters, from Kurile Islands and Saghalien southward to Niigata.

57. *Iburina iburia* (JORDAN & STARKS)

Nom. Jap. Yoroi-shachi-uwo.

Not very common, occasionally in the bay in summer and autumn.

Distrib.—Northern area of Japanese waters, southward to Cape Inubo.

58. *Iburiella kasawae* JORDAN & HUBBS

Not very common, frequently in the bay in autumn.

Distrib.—Hokkaido.

59. *Brachyopsis rostratus* (TILESIUS)

Nom. Jap. Shichirō-uwo.

Very common in the lake and bay, constantly found.

Distrib.—Petropavlovsk, Kamchatka; Lososei Bay, Saghalien; Kurile Islands.

60. *Pallasina barbata* (STEINDACHNER)

Nom. Jap. Yagi-uwo.

Common in the bay, rather constantly found, frequently in the lake too.

Distrib,—Arctic Ocean near Bering Sea; Bering Sea; Bristol Bay; Tareinsky Bay; Alaska; Unalaska; Kamchatka; northern part of Japan, from Kurile Islands southward to Aomori.

Family Cyclopteridae

61. *Cyclopterichthys ventricosus* (PALLAS)

Nom. Jap. Hotei-uwo.

Rather common in the shallow waters of the bay in spring.

Distrib.—St. Paul Island, Mendi Island, Bering Sea; northern area of Japanese waters, southward to Niigata.

62. *Eumicrotremus orbis* (GÜNTHER)

Nom. Jap. Ibo-dango.

Rare, exact locality not given.

Distrib.—Northern area of Japanese waters.

Remarks. Tanaka ('31) has stated that the species is a synonym of *Cyclopterus lumpus* LINNAEUS.

Family Cyclogasteridae.

63. *Liparis takashimaensis* NOJIMA

Common in the lake and bay, rather constantly found.

Distrib.—Off Takashima, Hokkaido.

64. *Cyclogaster* sp.

65. *Crystallias* sp.

Family Echeneididae

66. *Echeneis* sp.

67. *Echeneis brachyptera* LOWE

Nom. Jap. Kuro-koban.

Rare, occasionally found off the bay in summer.

Distrib.—Warm seas, northward to Cape Cod; throughout Japanese waters.

Family Pleuronectidae

68. *Paralichthys olivaceus* (TEMMINCK & SCHLEGEL)

Nom. Jap. Hirame.

Recorded by Hikita ('34) from Akkeshi. Not taken by the present writer.

Distrib.—Throughout Japanese waters, northward to Hokkaido.

69. *Verasper moseri* JORDAN & GILBERT

Nom. Jap. Kurosuji-garei.

Common in the lake and bay, occasionally off the bay, rather constantly found.

Distrib.—Northern area of Japanese waters, from Kurile Islands southward to Ibaragi.

70. *Protopsetta herzensteini* (SCHMIDT)

Nom. Jap. Chigo-garei, Sohachi-garei.

Rather common in the lake and bay.

Distrib.—Northern area of Japanese waters, north Kurile Islands and Saghalien south to Matsushima Bay and Oki Island; Korea; Vladivostok.

71. *Atheresthes evermanni* JORDAN & STARKS

Nom. Jap. Abura-garei.

Abundant in the waters off the bay, mainly in late autumn and winter.

Distrib.—Northern area of Japanese waters, southward to Ibaragi.

72. *Hippoglossus hippoglossus* (LINNAEUS)

Nom. Jap. Ohyō.

Common occurring off the bay, mainly in summer.

Distrib.—Northern area of Japanese waters.

73. *Lepidopsetta mochigarei* SNYDER

Nom. Jap. Kori-mochigarei, Mochigarei.

Not very common in the lake and bay in spring and summer.

Distrib.—Northern area of Japanese waters, from Kurile Islands southward to Kinkasan (Matsushima Bay).

Remarks. Tanaka ('31) has stated that the species is a synonym of *L. bilineata* (AYRES).

74. *Limanda angustirostris* KITAHARA

Nom. Jap. Magarei.

Recorded by Hikita ('34) from Akkeshi Bay and Akkeshi Lake, not taken by the present writer.

Distrib.—Northern area of Japanese waters, from Kurile Islands southward to Korea.

75. *Limanda schrencki* SCHMIDT

Nom. Jap. Kori-garei, Kurogashira-garei.

Very common in the lake and bay, mainly in early spring, however, rather constantly found in the former.

Distrib.—Northern area of Japanese waters, from Kurile Islands southward to Aomori.

76. *Limanda iridorum* JORDAN & STARKS

Nom. Jap. Ran-garei, Suna-garei.

Not very common in the lake and bay in summer.

Distrib.—Northern area of Japanese waters, from Kurile Islands and Saghalien southward to Aomori.

77. *Liopsetta pinnifasciata* (KNER)

Nom. Jap. Suna-garei, Tō-garei.

Very common in the lake and bay, mainly in winter.

Distrib.—Kamchatka; Amur River; northern area of Japanese waters, from Saghalien southward to Tokyo.

78. *Platichthys stellatus* (PALLAS)

Nom. Jap. Takanoha-garei.

Very common in the lake and bay, rather constantly found.

Distrib.—North Pacific on both coasts, southward to San Luis Obispo, and northern area of Japanese waters, southward to Tokyo and Korea.

79. *Kareius bicoloratus* (BASILEWSKY)

Nom. Jap. Ishi-garei.

Recorded by Hikita ('34) from Akkeshi. Not taken by the present writer.

Distrib.—Throughout Japanese waters, from Saghalien and Kurile Islands southward to Korea and northern China.

80. *Clidoderma asperrimum* (TEMMINCK & SCHLEGEL)

Nom. Jap. Same-garei.

Recorded by Hikita ('34) from Akkeshi. Not taken by the presnt writer.

Distrib.—Throughout Japanese waters, from Saghalien and Kurile Islands southward to Nagasaki.

Family Gobiidae

81. *Chaenogobius annularis annularis* (GILL)

Nom. Jap. Biringo.

Common in the lake, mainly in autumn.

Distrib.—Fresh and brackish waters throughout Japan, from Saghalien southward to Kyushu and Korea.

82. *Chaenogobius heptacanthus murorana* (JORDAN & SNYDER)

Nom. Jap. Hebi-hase.

Very common in the lake and bay, mainly in summer and autumn.

Distrib.—Northern area of Japanese waters, southward to Tokyo.

Family Trichodontidae

83. *Arctoscopus japonicus* (STEINDACHNER)

Nom. Jap. Hatahata.

Common in the bay in summer and late autumn.

Distrib.—Northern area of Japanese waters, from Kurile Islands southward to Akita; Korea.

Family Blenniidae

84. *Enedrias nebulosus* (TEMMINCK & SCHLEGEL)

Nom. Jap. Ginpo.

Common in the lake and bay, constantly found.

Distrib.—Throughout Japanese waters, from Kurile Islands southward to Nagasaki and Korea.

85. *Pholis pictus* (KNER)

Nom. Jap. Nishiki-ginpo.

Common in the bay, constantly found, occasionally in the lake too.

Distrib.—Kurile Islands; Saghalien; Okhotsk Sea.

86. *Alectrias benjamini* JORDAN & SNYDER

Nom. Jap. Musha-ginpo.

Scarcely found in the bay in spring.

Distrib.—Northern area of Japanese waters, mainly Saghalien and Hokkaido.

87. *Opisthocentrus ocellatus* (TILESIUS)

Nom. Jap. Ruruka, Genna.

Rather common in the lake and bay, constantly found.

Distrib.—Kamchatka; northern area of Japanese waters, southward to Aomori.

88. *Pholidapus dybowskii* (STEINDACHNER)

Nom. Jap. Muroran-gazi.

Very common in the lake and bay, constantly found.

Distrib.—Okhotsk Sea; Kurile Islands; Hokkaido.

89. *Ozorthe dictyogramma* (HERZENSTEIN)

Nom. Jap. Ezo-gazi.

Common in the bay, mainly in summer.

Distrib.—Northern area of Japanese waters, from Hokkaido southward to Same.

90. *Stichaeus nozawae* JORDAN & SNYDER

Nom. Jap. Taue-gazi.

Scarce, occasionally in the bay in summer.
Distrib.—Hokkaido.

91. *Dinogunellus grigorjewi* (HERZENSTEIN)

Nom. Jap. Nagazuka.

Rarely found in the bay in early spring.
Distrib.—Northern area of Japanese waters, from Saghalien southward to Mito; Korea.

92. *Lumpenus anguillaris* (PALLAS)

Nom. Jap. Unagi-gazi.

Rather common in the bay in summer.
Distrib.—North Pacific, along the coast of Alaska and southward to San Francisco; Kamchatka; northern area of Japanese waters, southward to Toyama Bay.

93. *Lumpenus fowleri* JORDAN & SNYDER

Nom. Jap. Nuime-gazi.

Rather common in the lake and bay, mainly in late autumn.
Distrib.—Northern area of Japanese waters, Hokkaido.
Remarks. Tanaka ('31) has stated that the species is a synonym of *L. anguillaris* (PALLAS).

Family Lycodidae

94. *Furcimanus nakamurae* TANAKA

Nom. Jap. Kurogenge.

Rare, one specimen preserved at Akkeshi M. B. Station, exact locality not given.
Distrib.—Northern area of Japanese waters, southward to Toyama Bay.

95. *Enchelyopus elongatus* (KNER)

Nom. Jap. Naga-gazi.

Common in the lake and bay, constantly found.
Distrib.—Northern area of Japanese waters, southward to Hokkaido.

Family Ammodytidae

96. *Ammodytes personatus* GIRARD

Nom. Jap. Ikanago.

Rather scarcely found in the bay in late spring.
Distrib.—Coasts of the North Pacific, on both sides; throughout Japanese waters, southward to Kyushu.

Family Gadidae

97. *Gadus macrocephalus* TILESIUS

Nom. Jap. Tara.

Abundantly found off the bay, mainly in winter.
Distrib.—Bering Sea; North Pacific, along the coast of Alaska and southward to Oregon, and northern area of Japanese waters, southward to Korea.

98. *Theragra chalcogramma* (PALLAS)

Nom. Jap. Suketō-dara.

Abundantly found off the bay, mainly in autumn and winter.
Distrib.—Bering Sea; North Pacific, along the coast of Alaska and southward to Puget Sound; Kamchatka; northern area of Japanese waters, southward to Korea.

99. *Eleginus navaga* (KÖLREUTER)

Nom. Jap. Komai.

Common in the lake and bay, rather constantly found.
Distrib.—Arctic shores of Asia and North America, southward to Bering Sea; Alaska; Kamchatka; northern area of Japanese waters, southward to Korea.

Bibliography

EHRENBAUM, E. 1901 Die Fishe der Arctis. Fauna Arctica, Bd. 2, ss. 65-168.

EVERMANN, B. W. & GOLDSBOROUGH, E. L. 1906 The Fishes of Alaska. Bull. Bur. Fish., vol. 26, Document no. 624, pp. 219-360.

GILBERT, C. H. & THOMPSON, J. C. 1905 Notes on the Fishes of Puget Sound. Proc. U. S. Nat. Mus., vol. 28, no. 1414, pp. 973-987.

GILBERT, C. H. & BURKE, C. V. 1912 Fishes from Bering Sea and Kamchatka. Bull. Bur. Fish., vol. 30, Document no. 754, pp. 33-96.

GOOD, G. B. & BEAN, T. H. 1895 Oceanic Ichthyology. Special Bull. U. S. Nat. Mus., pp. 1-529.

HIKITA, T. 1934 Flatfishes found in northern Japan. Suisan Kenkyu Iho, vol. 4, pp. 187-295.

JORDAN, D. S. 1896 Notes on Fishes, little known or new to Science. Proc. California Acad. Sci., Ser. 2, vol. 6, pp. 201-244.

——— 1905 Notes on the Salmon and Trout of Japan. Ann. Zool. Japan., Tokyo. vol. 5, pp. 161-162.

JORDAN, D. S. & EVERMANN, B. W. 1896-1900 The Fishes of North and Middle America. Bull. U. S. Nat. Mus., no. 47, pp. 1-3313.

JORDAN, D. S. & FOWLER, H. W. 1903 a A Review of the Cyprinoid Fishes of Japan. Proc. U. S. Nat. Mus., vol. 26, no. 1334, pp. 811-862.

——— ——— 1903 b A Review of the Elasmobranchiate Fishes of Japan. Proc. U. S. Nat. Mus., vol. 26, no. 1324, pp. 593-674.

JORDAN, D. S. & GILBERT, C. H. 1899 The Fishes of Bering Sea. Fur-Seal and Fur-Seal Islands of the North Pacific Ocean. pt. 3, pp. 433-492.

JORDAN, D. S. & HUBBS, C. L. 1925 Record of Fishes obtained by David Starr Jordan in Japan, 1922. Mem. Carnegie Mus., vol. 10, no. 2, pp. 93-330.

JORDAN, D. S. & SNYDER, J. O. 1900 A List of Fishes collected in Japan by Keinosuke Otaki, and by the United States Steamer Albatross, with Descriptions of Fourteen New Species. Proc. U. S. Nat. Mus., vol. 23, no. 1213, pp. 335-380.

——— ——— 1901 a List of Fishes collected in 1883 and 1885 by Pierre Louis Jouy and preserved in the United States National Museum, with Descriptions of Six New Species. Proc. U. S. Nat. Mus., vol. 23, no. 1325, pp. 739-769.

——— ——— 1901 b A Review of the Apodal Fishes or eels of Japan, with Descriptions of Nineteen New Species. Proc. U. S. Nat. Mus., vol. 23, no. 1239, pp. 837-890.

——— ——— 1902 a A Review of the Gobioid Fishes of Japan, with Descriptions of Twenty-one New Species. Proc. U. S. Nat. Mus., vol. 24, no. 1244, pp. 33-132.

——— ——— 1902 b A Review of the Gymnodont Fishes of Japan. Proc. U. S. Nat. Mus., vol. 24, no. 1254, pp. 229-264.

——— ——— 1902 c A Review of the Discolobus Fishes of Japan. Proc. U. S. Nat. Mus., vol. 24, no. 1259, pp. 343-351.

JORDAN, D. S. & SNYDER, J. O. 1902 d A Review of the Trachinoid Fishes and their Supposed Allies Found in the Waters of Japan. Proc. U. S. Nat. Mus., vol. 24, no. 1263, pp. 461–498.

——— ——— 1902 e A Review of the Salmonoid Fishes of Japan. Proc. U. S. Nat. Mus., vol. 24, no. 1269, pp. 567–593.

——— ——— 1902 f A Review of the Blennoid Fishes of Japan. Proc. U. S. Nat. Mus., vol. 25, no. 1293, pp. 441–504.

JORDAN, D. S. & STARKS, E. C. 1903 a A Review of the Synentognathous Fishes of Japan. Proc. U. S. Nat. Mus., vol. 26, no. 1319, pp. 525–544.

——— ——— 1903 b A Review of the Fishes belonging to the Family Hexagrammidae. Proc. U. S. Nat. Mus., vol. 26, no. 1348, pp. 1003–1013.

——— ——— 1904 a A Review of the Scorpaenoid Fishes of Japan. Proc. U. S. Nat. Mus., vol. 27, no. 1351, pp. 91–175.

——— ——— 1904 b A Review of the Cottidae or Sculpins found in the Waters of Japan. Proc. U. S. Nat. Mus., vol. 27, no. 1358, pp. 231-335.

——— ——— 1904 c A Review of the Japanese Fishes of the Family of Agonidae. Proc. U. S. Nat Mus., vol. 27, no. 1365, pp. 575–599.

JORDAN, D. S., TANAKA, S. & SNYDER, J. O. 1913 A Catalogue of the Fishes of Japan. Jour. Coll. Sci. Tokyo Imp. Univ., vol. 33, pp. 1-497.

JORDAN, D. S. & THOMPSON, W. F. 1914 Record of the Fishes obtained in Japan in 1911. Mem. Carnegie Mus., vol. 6, no. 4, pp. 205-313.

NOJIMA, S. 1936 On a New Species of *Liparis*. Trans. Sapporo Nat. Hist. Soc., vol. 14, pt. 3, pp, 179-180.

SCHMIDT, P. J. 1931 Fishes of Japan collected in 1901. Trans. Pac. Com. Acad. Sci. USSR., 2, pp. 1–176.

SNYDER, J. O. 1912 Japanese Shore Fishes collected by the U. S. Bureau of Fisheries Steamer "Albatross" Expedition of 1906. Proc. U. S. Nat. Mus., vol. 42, no. 1909, pp. 399–450.

TEMMINCK, C. J. & SCHLEGEL, H. 1842-1850 Pisces. Siebold's Fauna Japonica, pp. 1-32'. Leiden.

TANAKA, S. 1908 Notes on a Collection of Fishes made by Prof. Ijima in southern part of Sakhalin. Ann. Zool. Japon., vol. 6, pt. 4, pp. 235-254.

——— 1911–1930 Figures and Descriptions of Fishes of Japan, including Riukiu Islands, Bonin Islands, Formosa, Kurile Islands, Korea and southern Sakhalin. vol. 1-48, pp. 1-960. Tokyo.

——— 1931 On the Distribution of Fishes in Japanese Waters. Jour. Fac. Sci. Imp. Univ. Tokyo, vol. 3, pt. 1, pp. 1–90.

TOMIYAMA, I. 1936 Gobiidae of Japan. Jap. Jour. Zool., vol. 7, no, 1, pp. 37–112.