Japanese Journa of Ichthyology
Vol. 28. No. 1 1981

魚類学雑誌
28巻1号 1981年

Two Nominal Species of *Merluccius* from New Zealand and Southern South America

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(Received May 27, 1980)

Abstract Two nominal species of merlucciid fishes, *Merluccius australis* (Hutton) from New Zealand and *M. polylepis* Ginsburg from southern South America, are compared. Specimens from both areas have similar values for morphometric and meristic characters studied. It is considered that these two nominal species have not attained specific divergence. *M. polylepis* is relegated to the synonymy of *M. australis*.

The widely distributed fishes belonging to the genus *Merluccius* are divided into 14 nominal species, some of which are commercially important. The object of this paper is to compare *M. australis* from New Zealand (New Zealand hake) with *M. polylepis* from southern South America (Patagonian hake).

The New Zealand hake was first described by Hutton (1872) as *Gadus australis*. Günther (1880) regarded *M. australis* as a synonym of *M. gayi* and first reported this species from the Straits of Magellan. Thereafter, Norman (1937) examined specimens from New Zealand and the Straits of Magellan and identified all of them as *M. australis*. In 1954, Ginsburg studied the merlucciids found along the coast of the American continents and described a new species, *M. polylepis*, on the basis of specimens from the southern coast of Chile.

Materials and methods

A total of 271 specimens was examined; 70 from New Zealand waters, 94 from off Chilean Patagonia and 107 from off Argentine Patagonia. All materials were obtained from each area by otter trawl from Japanese research and exploratory research vessels (Fig. 1). Counts and measurements were taken from formalin-fixed materials following the methods of Hubbs and Lagler (1958). These specimens are deposited in the Far Seas Fisheries Research Laboratory (FSFL), Shimizu, Japan. Some fresh specimens were dissected on board to count vertebral numbers. Counts from 19 specimens of Patagonian hake (Argentine population) by Hanamura (1971) were included in these data.

Specimens studied are as follows: New Zealand hake: FSFL B1257; B2342～B2347; L0494; L0499; ED899; EI084; EI143; EI147; EI189; EI242; EI243; EI245; EI248; EI251; EI280; EI287; EI288; EI373; EI378; EI381; EI383; EI385; EI388; EI393; EI398 and 40 fresh specimens not preserved. Patagonian hake (Chilean population): FSFL EK430; EK450～EK458; EK460～EK479 and 64 fresh specimens not preserved. (Argentine population): FSFL V0869; V0877; V0887; B2373～B2378; EJ209～EJ212; EJ214～EJ229; EJ312 and 58 fresh specimens not preserved.

Results

Twenty-eight proportional characters of New Zealand and Patagonian hakes were measured. The relationship of head length, eye diameter, snout length, upper jaw length and pectoral fin length to standard length are shown in Fig. 2. The data indicate that growth of these characters is isometric and the two populations are not separable on the basis of relative length. Other proportional characters examined are as follows: body depth, diameter of orbit, interorbital width, suborbital width, lower jaw length, caudal peduncle depth, longest first dorsal fin ray length, longest second dorsal fin ray length (anterior and posterior lobes), pelvic fin length, longest anal fin ray length (anterior and posterior lobes), base length of first dorsal fin, base length of second dorsal fin, distance between first and second dorsal fins, base length of anal fin, length from snout tip to first dorsal fin origin, length from snout tip to second dorsal fin origin, length from snout tip to upper pectoral fin base, length

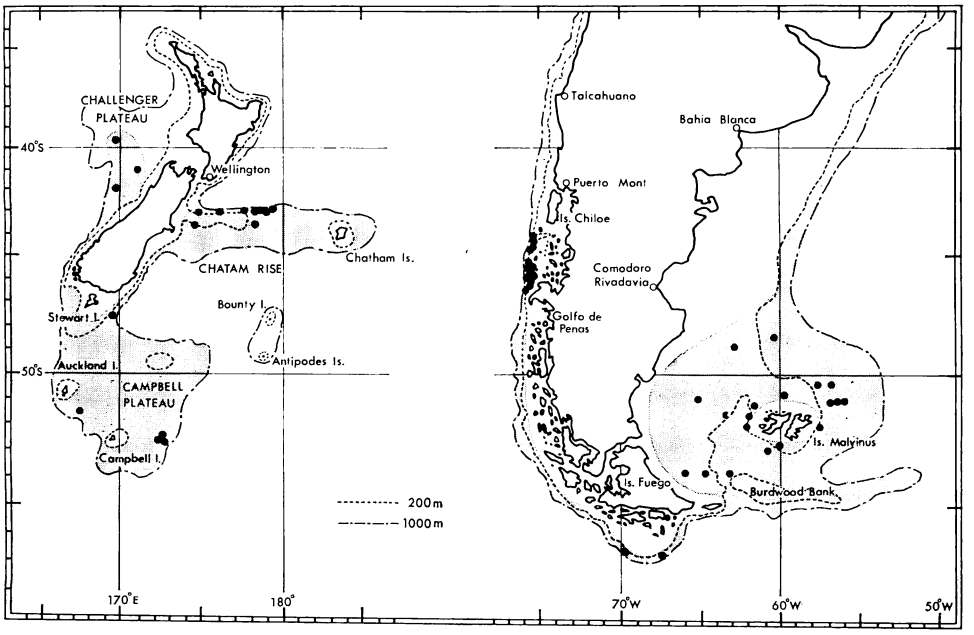

Fig. 1. Distribution of *Merluccius australis* in New Zealand and southern South American waters. Shaded areas show the rough distribution of this species. Black dots show the positions where the specimens used in this study were collected.

from snout tip to outer pelvic fin base, length from snout tip to anal fin origin, length from outer pelvic fin base to anal fin origin. These also show similar results. Nine meristic characters are also examined (Table 1). The data indicate that the meristic characters also show nearly identical ranges and almost the same mean values for the two populations.

Discussion

The New Zealand hake and the Patagonian hake (including Chilean and Argentine populations) have nearly identical ranges in all characters studied. For some characters there are slight differences in mean values between these two nominal species. These data suggest that the New Zealand and Patagonian hakes have not diverged enough to warrant recognition at the specific level.

The New Zealand and Patagonian hakes show clear differences from other species of *Merluccius* in some meristic characters. For example in the number of oblique rows of scales under the lateral line canal, the New Zealand and Patagonian hakes (144～171) differ from the Argentine hake, *Merluccius hubbsi* (120～142) and the Chilean hake, *Merluccius gayi* (106～130). Both the Argentine hake and the Chilean hake have some overlapping areas of geographical distribution with the Patagonian hake.

Ginsburg's (1954) grounds for differentiating specifically between the New Zealand and Patagonian hakes concern the faunal differences between these two areas and differences in the number of dorsal and anal fin rays. He noted that the fish fauna of New Zealand is very different from that of southern Chile and, therefore, it would be improbable that the two populations are conspecific. Recent studies (Iwai et al., 1972; Machida and Inada, 1979; Inada and Furuno, 1980) reveal that the fish faunas of New Zealand and southern Chile are very similar and that identical or very closely related species are distributed in each area. Ginsburg (1954) also noted that Chilean specimens of hake evidently had a greater number of second dorsal and anal fin rays; the ranges of the New Zealand hake for both fins were 36～41 (Ginsburg did not examine New Zealand specimens but took data from Hutton, 1872, and Waite, 1911),

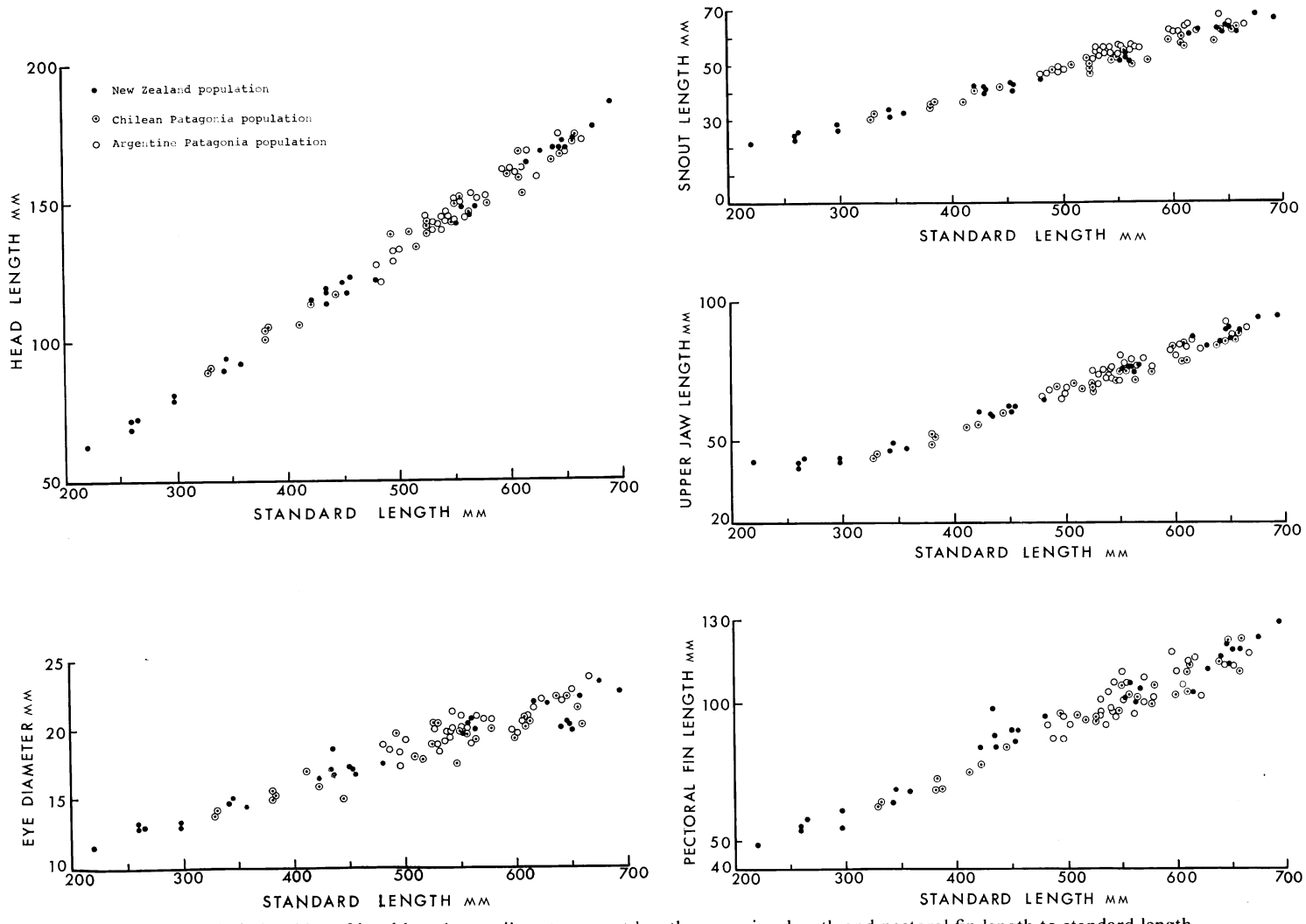

Fig. 2. Relationships of head length, eye diameter, snout length, upper jaw length and pectoral fin length to standard length of New Zealand and Patagonian hakes.

Table 1. Frequency distribution of 9 meristic characters of *Merluccius australis* from New Zealand and southern South American waters.

Population	Number of first dorsal fin rays					
	10	11	12	13	N	Mean
New Zealand	5	24	16	5	50	11.4
Chilean Patagonia	14	43	31	4	92	11.3
Argentine Patagonia	4	15	16		35	11.3

Population	Number of second dorsal fin rays								
	39	40	41	42	43	44	45	N	Mean
New Zealand		2	10	19	12	3	2	48	42.2
Chilean Patagonia		3	23	24	28	10	4	92	42.3
Argentine Patagonia	2		5	9	12	6	1	35	42.5

Population	Number of anal fin rays								
	40	41	42	43	44	45	46	N	Mean
New Zealand		5	15	15	3	3	1	50	42.9
Chilean Patagonia	1	6	14	17	32	17	6	93	43.6
Argentine Patagonia	1	6	7	11	6	3		34	42.7

Population	Number of pectoral fin rays					
	13	14	15	16	N	Mean
New Zealand	4	28	12		44	14.2
Chilean Patagonia	15	47	31	1	94	14.2
Argentine Patagonia	10	14	8	2	34	14.1

Population	Number of lower gill-rakers						
	8	9	10	11	12	N	Mean
New Zealand		11	44	12		67	10.0
Chilean Patagonia	1	16	48	27	2	94	10.1
Argentine Patagonia	1	17	35	14	1	67	10.0

Population	Number of total gill-rakers						
	11	12	13	14	15	N	Mean
New Zealand	2	23	29	13		67	12.8
Chilean Patagonia	3	15	40	27	9	94	13.3
Argentine Patagonia	2	12	21	10	4	49	13.0

Population	Number of abdominal vertebrae						
	24	25	26	27	28	N	Mean
New Zealand			10	26	6	42	26.9
Chilean Patagonia	1	4	31	27		63	26.3
Argentine Patagonia		1	15	32	8	56	26.8

Population	Number of total vertebrae							
	53	54	55	56	57	58	N	Mean
New Zealand	1	2	13	19	6	1	42	55.7
Chilean Patagonia			14	35	14		63	56.0
Argentine Patagonia		2	21	33	16	3	75	56.0

Population	Number of oblique rows of scales								
	144	145～149	150～154	155～159	160～164	165～169	170～171	N	Mean
New Zealand	1	8	17	16	15	4		61	155.7
Chilean Patagonia		4	7	12	7	11	4	45	159.9
Argentine Patagonia		1	7	18	18	15	1	60	160.5

whereas Chilean specimens had 43～45 second dorsal and 42～45 anal fin rays. My counts for New Zealand hake are 40～45 for second dorsal and 41～46 for anal fin rays. I did not examine the type specimens of *M. australis*, but Hutton (1872) gives 41 for both fins (counted separately 19 for the anterior and 22 for the posterior lobes). These counts are within the ranges I found for both fins. Waite's (1911) count of 36 for both fins of the New Zealand hake is very low compared with Hutton's and mine. Even if these low counts for New Zealand hake were accepted (which would give ranges of 36～45 for second dorsal and 36～46 for anal fin rays), the New Zealand hake and the Patagonian hake (39～45 for second dorsal and 40～46 for anal fin rays) are not separable by these characters. Ginsburg's (1954) counts for both fins of the Patagonian hake agree well with mine.

Therefore, I consider the nominal New Zealand and southern South American species as identical; *Merluccius polylepis* Ginsburg should be considered to be a junior synonym of *Merluccius australis* (Hutton).

Synonymy

Merluccius australis (Hutton)

Gadus australis Hutton, 1872: 45, pl. 7 (fig. 72) (Type locality: Cook Straits, New Zealand).

Merluccius gayi (nec Guichenot, 1848): Günther 1880: 22 (Gray Harbor, Straits of Magellan); Waite, 1911: 182, pl. 30 (fig. 2) (mouth of Clutha River, New Zealand); Phillipps, 1927: 23 (bibliography).

Merluccius australis: Norman, 1937: 48 (bibliography); Svetovidov, 1948: 136 (bibliography); Buen, 1954: 74 (Puerto Montt, Chile); Angelescu et al., 1958: 152 (bibliography); Cabo, 1965: 28 (Tierra del Fuego).

Merlangius (*Huttonichthys*) *australis*: Whitley, 1937: 122 (bibliography).

Merluccius polylepis Ginsburg, 1954: 195, fig. 2 (Castro, Chile); Buen, 1958: 109 (bibliography); Wysokinski, 1974: 19 (Falkland Islands and Tierra del Fuego).

Merluccius gayi australis: Mann, 1954: 81 (Subantarctic to Talcauhano); Angelescu et al., 1958: 154 (bibliography).

Merluccius gayi hubbsi (nec Marini, 1933): Mann, 1954: 83 (Cape Horn to Puerto Montt); Angelescu et al., 1958: 154 (bibliography).

Merluccius gayi polylepis: Angelescu et al., 1958: 155 (bibliography) / Cabo, 1965: 28 (southern Chile to Tierra del Fuego).

Acknowledgments

I express my sincere gratitude to Prof. Tamotsu Iwai of the Kyoto University, Dr. Teruya Uyeno of the Department of Paleontology, National Science Museum, Tokyo and Dr. Daniel M. Cohen of the National Marine Fisheries Service, NOAA, Washington, D. C. for their invaluable suggestions and criticisms in reading the manuscript. I am also indebted to Drs. Ikuo Ikeda, Tetsuya Sato and Hiroshi Hatanaka of the Far Seas Fisheries Research Laboratory, Shimizu, who made facilities for me to study these specimens at their laboratory.

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ニュージーランド及び南米南部産の *Merluccius* 属魚類のシノニム

稲田伊史

メルルーサ科 *Merluccius* 属魚類は世界で 14 種が分布しているが，ニュージーランドに分布する *Merluccius australis*（ニュージーランド・ヘイク）と南米南部（パタゴニア海域）に分布する *M. polylepis*（パタゴニア・ヘイク）の 2 種を形態学的に比較した．この両海域から得られた標本は吟味した全ての形質（9 つの計数値と 28 の計測値）において互いに似た値を示した．他方，この両種は他の *Merluccius* 属魚類の各種といくつかの形質で明瞭に異なっていた．従ってこれらの両種は種のレベルに分化していないと考えられ，*M. polylepis* は *M. australis* の同種異名とされるべきである．

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