

Matylda GĄSOWSKA

Coregonids classification discussed on the basis of *Coregonus pollan*  
THOMPSON from Lough Neagh (Northern Ireland)

O systematyce koregonidów na przykładzie *Coregonus pollan*  
THOMPSON z jeziora Lough Neagh (Północna Irlandia)

О систематике сигов на примере *Coregonus pollan* THOMPSON из озера  
Лох-Ней (Северная Ирландия)

[Pl. I-II]

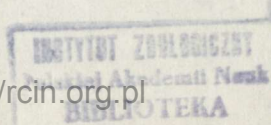
Introduction

The coregonids classification remained until now the controversial subject. Therefore each paper dealing with the analysis of any species of the genus *Coregonus* L. approaches us to the correct solution of this problem.

Some investigators as REGAN, 1908, classify the coregonids on the basis of mouth position; BERG, 1948, supplements this taking also into account the extend of maxilla toward the eye; HUBBS, 1947, expresses the same in a little different way. He considers the position of the premaxillaries (intermaxillaries) being either "antrorse or retrorse". The position of the premaxillaries molds adequately the shape of the front of the snout and the cleft of the mouth, which can be terminal or subterminal.

The other group of authors as SVÄRDSON, 1957, and DOTRENS, 1959, classify the coregonids on the basis of gill rakers number on the first branchial arch.

REGAN, 1908, in the synopsis of the species of British and Irish coregonids discusses three species: the whitefish with "lower jaw projecting" represented by *Coregonus vandesius* RICHARDSON and one subspecies; the whitefish with "jaw equal anteriorly" represented by *C. pollan* THOMPSON with two subspecies and the whitefish with "lower jaw included within the upper" represented



by *C. clupeoides* LACÉPÈDE with two subspecies. According to him all these species belong to the genus *Coregonus* L.

BERG, 1948, correlating two features (position of the mouth's cleft and the extend of the maxilla) included the coregonids with the upper and terminal mouth and the maxilla extending under the pupil, to the subgenus *Leucichthys* DYBOWSKI.

Among the American investigators there is still some argument as to how classify the coregonids. KOELZ, 1929; C. L. HUBBS and KARL, F. LAGLER, 1947; SCOTT, 1958; SCOTT and STANFORD, W. SMITH, 1956, recognize the whitefish with "jaw equal anteriorly", known as "ciscos" or "lake herring" as a different genus *Leucichthys* DYBOWSKI. The other American authors — WILIMOWSKY, 1954; ESCHMEYER and BAILAY, 1959; NORDEN, 1961; LINDSEY, 1962, are the adherent of one only genus — *Coregonus* which includes all forms of whitefish.

Of the recent European investigators ought to be mentioned SVÄRDSON, 1957, and DOTRENS, 1959. When investigating the coregonids of their own countries they arrived to the conclusion that the number of gill rakers of the first branchial arch is the most useful feature for classifying the coregonids. DOTRENS introduced as additional feature the "écart" — relativ length of the gill raker.

The classification on the basis of the gill rakers number, according to the conception of SVÄRDSON and DOTRENS, contradicts, in some cases, classification based on the mouth position (REGAN, 1908), the extend of the upper jaw (BERG, 1948) and the shape of maxilla and supramaxilla (GAŠOWSKA, 1958; NORDEN, 1961) as well.

DOTRENS on the basis of gill rakers number and "écart" divided the Swiss coregonids into five types and when he had applied that division for classifying the British and Irish whitefish he came also to such result. *Coregonus pollan* THOMPSON from Lough Neagh (Northern Ireland) had been grouped by him with gwyniad, *C. clupeoides pennantii* CUV. et VAL<sup>1</sup>. from the Lake Bala (Britain). He recognised these both forms as belonging to the type „Gangfisch" represented in Swiss by Brienzlig — *C. macrophthalmus* NÜSSLIN, from the Lake Untersee and Brienzensee. All these three forms have really very similar number of gill rakers: pollan 35–40, gwyniad 36–41 and Brienzlig 35–44 but pollan differs essentially from gwyniad and Brienzlig by the other features.

#### Material and analysis

Having at my disposal five specimens of pollan and many specimens of gwyniad from which I had chosen fourteen specimens at random for osteological comparison, I had the opportunity to check some osteological and morph-

<sup>1</sup> According to the author the right name of the gwyniad from Lake Bala is *Coregonus lavaretus pennantii* CUV. et VAL.

ological characters of the species mentioned. Pl. I, figs. 1–3, shows the position of the mouth opening and the extend of the maxilla toward the eye in the both species. In gwyniad the mouth is subterminal, intermaxillaria are retrorse, the maxilla extends till the oral margin of the eye only. In the pollan intermaxillaria are antrorse. The jaws are equal anteriorly and maxilla extends almost to the pupil. Correlatively with these features maxilla and supramaxilla are differently shaped. The difference is the most striking in the shape and proportion of maxilla. In pollan the anterior part of it is shorter and narrower in comparison with the posterior part, in the gwyniad the anterior and posterior parts are almost of the same length. The posterior part of gwyniad is curved longitudinally while in the pollan this part is not curved or sometimes on the very margin only [Pl. II, figs. 4–5]. One states also the difference in the construction of supraethmoid. In pollan this bone is a thin and flat plate [Pl. II, fig. 8], in gwyniad it is pointed anteriorly and dorsally bears a shallow groove, its ventral surface bears a median vertical ridge embeded into the ethmoid cartilages [Pl. II, figs. 9, 10]. The supraethmoid bone of this type is proper to the coregonids of the lavaretus-group (the same is demonstrated by BERG, 1940, p. 237). It is also stated in American whitefishes: *Coregonus clupeaformis* (MITCHILL) and *C. nasus* (PALLAS) by NORDEN, 1961, p. 715: "In these two species, the supraethmoid has a median, vertical ridge of bone at its pointed anterior end".

#### Summary of results

Considering the above said one can not regard the pollan as conspecific to the gwyniad as it was done by DOTRENS, 1959. The relationship of pollan with the Brienzlig from the Brienzensee (Swiss) is also very doubtful. My own scanty knowledge of the Gangfisch from Bodensee (Untersee), based on the examination of the maxilla and supramaxilla, shows that this form belongs to the *lavaretus*-group. Analogically the pollan can not be put among synonyms of *C. oxyrhynchus* L. together with *C. generosus* PETERS, as this is done by SVÄRDSON, 1957, because these both forms belong to the *lavaretus*-group, and only the character to common with the pollan is the similar number of gill rakers. The other features (maxilla and supraethmoid) are quite different. The pollan by its shape of maxilla and supraethmoid belong to the *leucichthys*-group (GAŚOWSKA, 1958) and by the same to the subgenus *Leucichthys* DYB. (BERG, 1948).

Coregonids classification of DOTRENS and SVÄRDSON in this case contradicts the reality. The species of the whitefish of the *leucichthys*-group are known to have the same great range of gill rakers number as the species of the *lavaretus*-group. The first group is characterised by 26–68 gill rakers in general: *Coregonus tugun* (PALLAS) 26–33; *C. peled* (GMELIN) 49–68; *C. autumnalis* (PALLAS) 36–51. In the second group — subgenus *Coregonus* L. — only the forms from the Middle Europe, (STEINMANN, 1951), Baltic basin (BERG, 1948)

and Finland (JÄRVI, 1928) have 15–58 gill rakers. In Siberian species this number is still greater (15–72).

The isolated distribution of the representatives of the *leucichthys*-group, namely *Coregonus pollan* THOMPSON in the west of Europe is very important zoogeographical case. This group of whitefish is lacking in the Middle Europe and in the Baltic basin as well. In north-east Europe it is represented by *Coregonus peled* (GMELIN) in Mezen River. There are many forms of *leucichthys*-group in North America, particularly in the Great-Lakes region. They are characterised by having 27–59 gill rakers on the first branchial arch.

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## STRESZCZENIE

Na podstawie analizy kształtu maxillare, supramaxillare, supraethmoideum i położenia otworu ustnego oraz zasięgu szczęki górnej w stosunku do oka autorka uznaje *Coregonus pollan* THOMPSON z jeziora Lough Neagh (Północna Irlandia) za formę, należącą do grupy *leucichthys*. Podkreśla także fakt izolowanego i wysuniętego na zachód Europy stanowiska przedstawiciela rodzaju tej grupy rodzaju *Coregonus*.

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## РЕЗЮМЕ

На основании анализа формы maxillare, supramaxillare и supraethmoideum, а также положения ротового отверстия и заднего конца верхней челюсти по отношению к вертикали глаза автор считает, что *Coregonus pollan* THOMPSON из озера Лох-Ней (Северная Ирландия) является формой относящейся к группе *leucichthys*. Автор подчеркивает факт также изолированного и значительно выдвинутого на запад Европы местонахождения представителя этой группы рода *Coregonus*.

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## Plate I

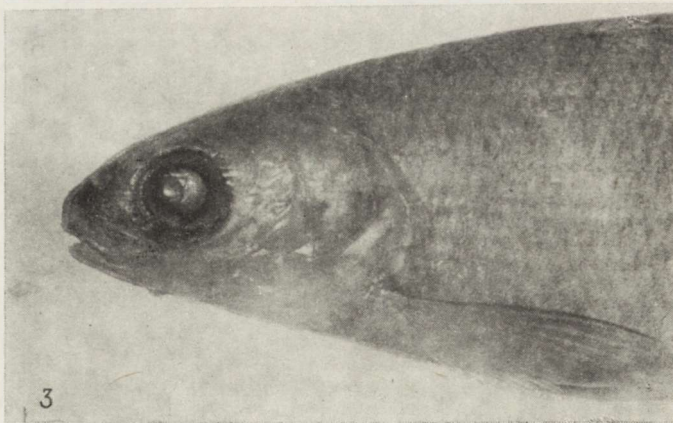
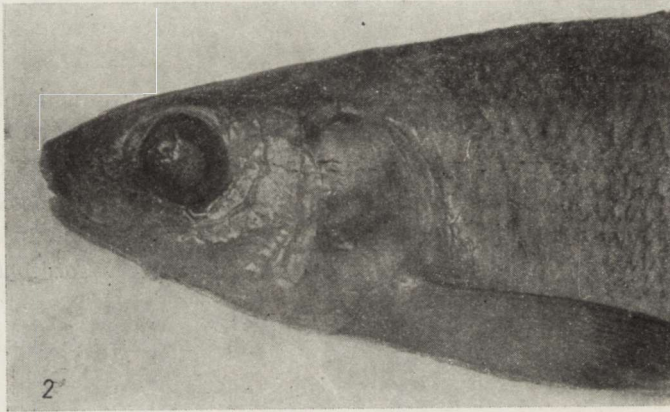
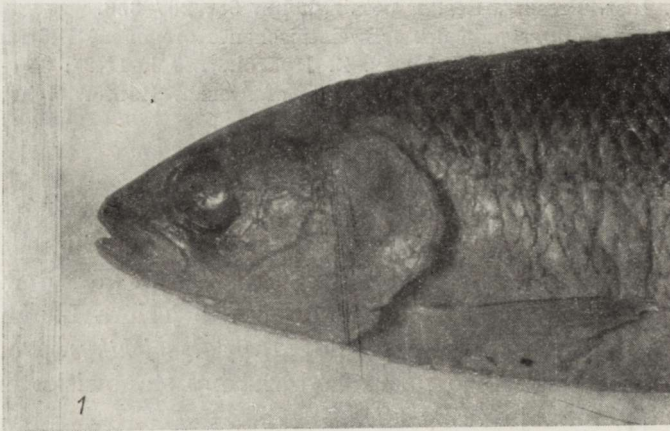
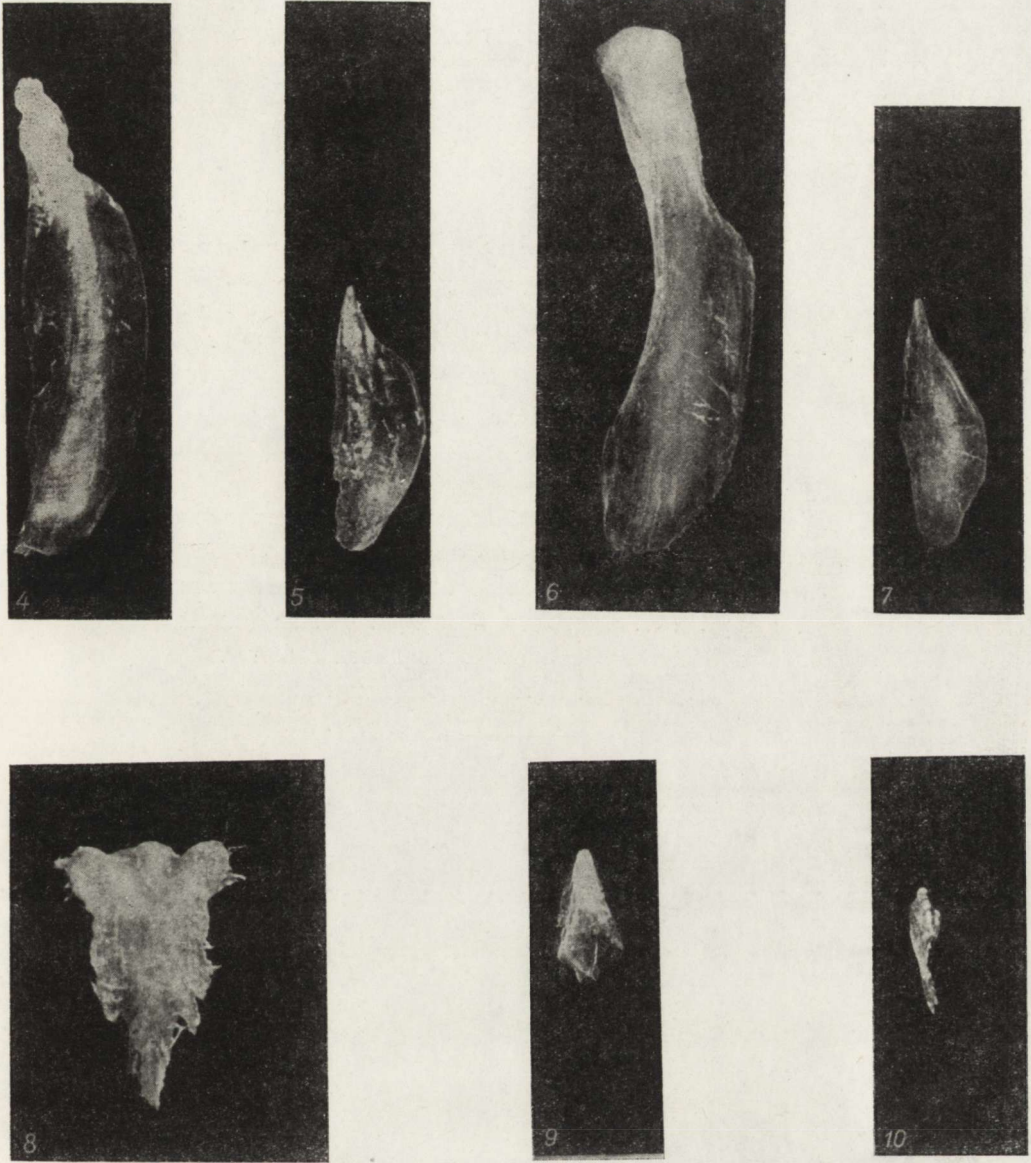


Fig. 1. *Coregonus pollan* THOMPSON, Lough Neagh (Northern Ireland).  
Figs. 2, 3. *Coregonus lavaretus penmantii* CUV. et VAL., Lake Bala (England). 2 — with the snout rounded; 3 — with the snout blunt.



Figs. 4, 5. *Coregonus pollan* THOMPSON, Lough Neagh (Northern Ireland). 4 — maxilla; 5 — supraethmoid.

Figs. 6, 7. *Coregonus lavaretus pennantii* (CUV. et. VAL., Lake Bala (England). 6 — maxilla; 7 — supraethmoid.

Fig. 8. *Coregonus pollan* THOMPSON, supraethmoid, dorsal view.

Figs. 9, 10. *Coregonus lavaretus pennantii* CUV. et VAL., supraethmoid. 9 — dorsal view; 10 — side view.

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