A new species of ocean perch in the Barents Sea
(Sebastes mentella Travin sp. nov.)

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A new species of ocean perch in the Barents Sea
(Sebastes mentella Travin sp. nov.)

by V.I. Travin
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Until recently, only one species of ocean perch, Sebastes marinus (L.), was known from the Barents Sea [1, 2]. Another species, S. viviparus Kr., which is commonly found in the area of sea cliffs off the northwestern coast of Norway [3], rarely comes into the Barents Sea, and therefore is not included in the list of its ichthyofauna. Meanwhile, a number of facts and observations have long given us cause to doubt the systematic impermeability of the Barents perch population.

The material collected during recent expeditions of the Polar Institute gives grounds for establishing a new species of ocean perch which is easily distinguished from S. marinus both in its morphological characters, and conditions of habitation.

The most prominent external features of the new species, which we have named Sebastes mentella sp. nov., are a sharp bony appendage on the lower jaw (weakly defined as a small spherical tubercle or absent altogether in S. marinus, cf. fig. 1), large eyes, a relatively large head, and a bright red colour of the body (in contrast to the orange-red colour of S. marinus).

The most characteristic ecological feature of the new species, which determines many of its biological features, is its deepwater mode of life. It lives at depths of 300 metres and more. Only single specimens are encountered at smaller depths, and none have been found at depths smaller than 200 m. S. marinus is usually encountered at depths of 150-300 m. The optimal temperature at which the largest concentrations of S. mentella are encountered (about 2°C) is lower than the one for S.
marinus (about 4°C), which is also determined by the great depths inhabited by S. mentella.

Fig. 1. Drawings of (a) Sebastes marinus (L.) and (b) S. mentella sp. nov. Medvezhi Bank. Length of each 40 cm

The eastern boundary of the S. mentella range extends from Spitsbergen to Bear Is., and then down towards the coasts of Europe along the 30th meridian. At the same time, the frequency of its occurrence diminishes from west to east. The extrusion of larvae occurs predominantly near the Lofoten Isls., during the same period as in S. marinus (from April to June); however, the possibility of cross-breeding with S. marinus is highly unlikely, as both species keep to different depths at the breeding grounds.

The catches of S. mentella in the Barents Sea are extremely uniform in age and size composition. They consist predominantly of 13—17-year-old fish measuring 34-45 cm in length. The age and size series of S. marinus are extensive and multi-peaked, and consist of individuals from 8 to 27 cm and more in length. The growth rate of S. mentella and S. marinus up to the age of 5-7 years is similar, but after that the first species begins to lag considerably behind the latter in growth, and this lag increases with age (table 1).
The above data on the growth of both perch species and the absence of the first age groups in the catches of bottom trawls are an indication that both species spend the first years of life in similar conditions (in the pelagic zone), and only in the 5-7th year become benthopelagic, but in different conditions.

A morphometric comparison was carried out with 100 specimens of each species, caught in September 1947 near Bear Is. in the Barents Sea. The sex composition and absolute length of these perches are shown in table 2.

At first we established to what extent the difference in the sex and size composition of the samples could affect the morphometric values. For this, the material was processed separately for the males and females, and the whole sample of smaller *S. mentella* (mean length 39.21 cm) was initially compared with the selected small individuals of *S. marinus* (24 specimens, mean length 38.00 cm). Neither of the species displayed sexual dimorphism, and we found that the influence of a size difference in the fish of the sample was not greater than the margin of error during processing. Therefore, the final conclusions were drawn on

<table>
<thead>
<tr>
<th>Species</th>
<th>Age, years</th>
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<th></th>
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<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>6 7 8 9</td>
<td></td>
</tr>
<tr>
<td><em>S. marinus</em> (L.)</td>
<td>6.26 9.05 12.87 16.50 19.95 23.49 26.61 29.62 32.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. mentella</em> sp. nov.</td>
<td>6.28 10.01 13.09 16.30 19.32 22.10 25.27 27.77 29.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Age, years</th>
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<tbody>
<tr>
<td></td>
<td>10 11 12 13 14 15 16 17 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. marinus</em> (L.)</td>
<td>35.33 38.00 40.46 42.46 44.07 45.82 47.18 48.17 49.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. mentella</em> sp. nov.</td>
<td>31.81 33.44 35.20 36.47 37.69 38.51 39.12 40.16 40.45</td>
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</tr>
</tbody>
</table>

### Table 1. Growth of *S. marinus* (L.) and *S. mentella* sp. nov.
(reverse calculation) (mean absolute body length in cm)

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of males</th>
<th>No. of females</th>
<th>Total body length, cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>range mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. marinus</em> (L.)</td>
<td>72 28</td>
<td>29.9-63.2</td>
<td>50.73</td>
</tr>
<tr>
<td><em>S. mentella</em> sp. nov.</td>
<td>62 38</td>
<td>29.3-45.5</td>
<td>39.21</td>
</tr>
</tbody>
</table>
the basis of an analysis of whole samples, without the grouping of them according to sex, size and age.

![Graph showing horizontal diameter of eye in % of length of head]

Fig. 2. Horizontal diameter of eye in % of the length of the head in *Sebastes marinus* (L.) (1) and *S. mentella* sp. nov. (2)

**Diagnosis of *Sebastes mentella* sp. nov.*: D XIII-XVI 13-16, A III 8-10, P 18-20, V I 5 (D XIII-XVI 14-17, A III 6-10, P 18-21, V I 5-6). No. of vertebrae (without urostyle) 30-31, most commonly 30, on average 30.01 (30-31, most commonly 30, on average 30.21). I.I. 33-38, most commonly 35, on average 35.81 (33-38, most commonly 35, on average 35.34). In percentage of total length of body: length of head 29.5-34.5, most commonly 31.5-32.5, on average 31.95 (27.5-34.5, most commonly 29.5-30.5, on average 30.43); maximum height of body 23.5-29.5, most commonly 25.5-26.5, on average 26.26; maximum thickness of body 8.5-12.5, most commonly 9.5-11.5, on average 10.60; height of head 21.5-26.5, most commonly 23.5-24.5, on average 23.58 (18.5-26.5, most commonly 22.5-23.5, on average 22.98). In percentage of length of head: length of snout 27.5-36.5, most commonly 30.5-31.5, on average 31.41; horizontal diameter of eye 23.5-35.5, most commonly 28.5-29.5, on average 29.22 (19.5-28.5, most commonly 22.5-23.5, on average 23.12); vertical diameter of eye 24.5-34.5, most commonly 27.5-28.5, on average 28.69 (19.5-29.5, most commonly 21.5-22.5, on average 22.52); interorbital region of head 36.5-44.5, most commonly 41.5-42.5, on average 41.34 (39.5-50.5, most commonly 44.5-45.5, on average 45.28); width of forehead 13.5-22.5, most commonly 17.5-18.5, on average 18.02 (16.5-23.5, most commonly 19.5-20.5, on average 19.94); length of lower jaw 48.5-56.5, most commonly 52.5-53.5, on average 52.58; length of upper jaw 37.5-44.5, most commonly 40.5-41.5, on

* Corresponding figures for *S. marinus* are given in brackets.
average 41.18; width of upper jaw 11.5-16.5, most commonly 13.5-14.5, on average 13.71. Horizontal diameter of eye in percentage of interorbital region of head 58.5-89.5, most commonly 70.5-71.5, on average 70.89 (40.5-68.5, most commonly 48.5-49.5, on average 51.09). Width of forehead in percentage of eye diameter 42.5-83.5, most commonly 60.5-61.5, on average 61.91.

A large eye, a large head with a small interorbital region, a narrower forehead, a highly developed bony chin tubercle, a characteristic bright red colour and differences in the feeding ranges unfailingly distinguish the deepwater redfish *S. mentella* from the common *S. marinus* (L.).

The new species of ocean perch can become an important commercial species for the deepwater fishery.

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References

