ADDITIONS TO REFERENCE DATA BASES

**16S:**  
7/10/25 ; Taxonomy according to <https://explorer.natureserve.org>

Began at line 1763:

>Eukaryota;Chordata;Actinopteri;Carangiformes;Pleuronectidae;Myzopsetta;Myzopsetta proboscidea

GTAATCACTTGTCTTTTAAATGAAGACCTGTATGAATGGCATCACGAGGGCTTAGCTGTCTCCCATCTCCAGTCAATGAAATTGACCTCCCCGTGCAGAGGCGGGGATGATTACATAAGACGAGAAGACCCTATGGAGCTTTAGACCTAAAGTAAGTCACGTTTAATATGCTATGATAACAGCGAAAACTTAGTGATATTTACTGAAGTGTCTTTGGTTGGGGCGACCGCGGGGTAAAACACAACCCCCATGTGGACCGGGGATATTATCCCTAATACTCAGAGCCTCTACTCCAAGTAACAGAAATTCTGACTTTTCTGATCCGGTATAACCGATCAACGAACCGAGTTACCCTAGGGATAACAGCGCAATCC

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

GCAATCACTTGTCTTTTAAATGAAGACCTGTATGAATGGCATCACGAGGGCTTAGCTGTCTCCCATCTCCAGTCAATGAAATTGACCTCCCCGTGCAGAGGCGGGGATGATTACATAAGACGAGAAGACCCTATGGAGCTTTAGACCTAAAGTAAGTCACGTTTAATATGCTATGATAACAGCGAAAACTTAGTGATATTTACTGAAGTGTCTTTGGTTGGGGCGACCGCGGGGTAAAACACAACCCCCATGTGGACCGGGGATATTATCCCTAATACTCAGAGCCTCTACTCCAAGTAACAGAAATTCTGACTTTTCTGATCCGGTATAACCGATCAACGAACCGAGTTACCCTAGGGATAACAGCGCAATCC

>Eukaryota;Chordata;Actinopteri;Carangiformes;Pleuronectidae;Myzopsetta;Myzopsetta proboscidea

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmondiae;Coregonus;Coregonus laurettae

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>Eukaryota;Chordata;Actinopteri;Pleuronectiformes;Pleuronectidae;Limanda;Limanda aspera

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>Eukaryota;Chordata;Actinopteri;Perciformes;Stichaeidae;Acantholumpenus;Acantholumpenus mackayi

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>Eukaryota;Chordata;Actinopteri;Esociformes;Esocidae;Esox;Exos sp.

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>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Gadus;Gadus chalcogrammus

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>Eukaryota;Chordata;Actinopteri;Uranoscopiformes;Ammodytidae;Ammodytes;Ammodytes hexapterus

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>Eukaryota;Chordata;Mammalia;Artiodactyla;Monodontidae;Delphinapterus;Delphinapterus leucas

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**12S**

7/10/25; Taxonomy according to <https://explorer.natureserve.org>

Began at line 27120

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae:Boreogadus;Boreogadus saida

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Onchorynchus;Oncorhynchus kisutch

GCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCTAGTTGATAACTACCGGCGTAAAGAGTGGTTATGGAAAGATATTTAATAAAGCCGAACACCCCCTCAGCCGTCATACGCACCTGGGAGCACGAAGACCTACCGCGAAAGCAGCTTTAATTACGCCTGACCCCACGACAGCTAAGAAACAAACTGGGATTAGATACCCCACTATG

>Eukaryota;Chordata;Actinopteri;Perciformes;Sticheidae;Stichaeus;Stichaeus punctatus

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>Eukaryota;Chordata;Actinopteri;Perciformes;Sticheidae;Acantholumpenus;Acantholumpenus mackayi

GCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCAAGTTGACAGACATCGGCGTAAAGGGTGGTTAAGTTAAATTATAAACTAAAGCCGAACATCCTCAAGGCTGTTATACGCACCCGAAGATAAGAAGTTCAACCACGAAGGTGGCTTTATTTAGTCTGAACCCACGAAAGCTACGGCACAAACTGGGATTAGATACCCCACTATG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Gadus;Gadus chalcogrammus

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Onchorynchus;Oncorhynchus keta

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmoniae;Coregonus;Coregonus nasus

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>Eukaryota;Chordata;Actinopteri;Perciformes;Agonidae;Brachyopsis;Brachyopsis segaliensis

GCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCAAGTTGATAGACACCGGCGTAAAGCGTGGTTAAGTTAAAACTCATACTAAAGTCAAACATCTTCAAGACTGTTATACGTAACCGAAGACAGGAAGTTCAACCACGAAAGTGACTTTACTTGATCTGACCCCACGAAAGCTAAGGAACAAACTGGGATTAGATACCCCACTATG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae:Boreogadus;Boreogadus saida

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Onchorynchus;Oncorhynchus gorbuscha

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>Eukaryota;Chordata;Actinopteri;Perciformes;Zoarcidae;Gymnelus;Gymnelus viridis

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>Eukaryota;Chordata;Actinopteri;Perciformes;Agonidae;Aspidophoroides;Aspidophoroides monopterygius

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>Eukaryota;Chordata;Mammalia;Primates;Hominidae;Homo;Homo sapiens

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Coregonus;Coregonus laurettae

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>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Gadus;Gadus morhua

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>Eukaryota;Chordata;Actinopteri;Perciformes;Liparidae;Liparis;Liparis miostomus

GCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCAAGTTGAAAGACACCGGCGTAAAGCGTGGTTAAGTTAAATTTAAGCTAAAGTTAAACATCTTCAAGACTGTTATACGTATCCGAAGATAGGAACCTCAATTACGAAAGTAACTTTACACAAGCTGAACCCACGAAAGCTATAGCACAAACTGGGATTAGATACCCCACTATG

>Eukaryota;Chordata;Actinopteri;Myctophiformes;Mycophidae;Stenobranchius;Stenobrachius leucopsarus

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>Eukaryota;Chordata;Actinopteri;Perciformes;Sebastidae;Sebastes;Sebastes entomelas

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**7/11/2025**

**Begin at line 27156**

>Eukaryota;Chordata;Actinopteri;Labriformes;Ammodytidae;Ammodytes;Ammodytes hexapterus

CACCGCGGTTATACGAGAGGCCCAAGCTGATAGACCCCGGCGTAAAGAGTGGTTAAGATAAGCTTAAAACTAAAGCCGAACACCCTCACAGCTGTTATACGCACCCGAGAGTAAGAAGCCCAACTACGAAAGTGGCTTTACAACCCCTGAACCCACGAAAGCTATGACA

>Eukaryota;Chordata;Actinopteri;Labriformes;Ammodytidae;Ammodytes;Ammodytes hexapterus

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>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

CCCAAAGGACTTGGCGGTGCCTCACACCCACCTAGAGGAGCCTGTTCTTGAATCGATAATCCCCGTTCAACCTCACCACCCCTTGTTAGACCCGCCTATATACCGCCGTCGTCAGCTCACCCTGTGAAGGACTTAAAGTGAGCAAAATGGGCAAAACCCAGAACGTCAGGTCAAGGTGCAGCGTATGGGGTGGGAAGAAATGGGCTACATTACCTATTGCAGGTTACTACGAATGGGGCCGTGAAACCGGCCCCTGAAGGTGGATTTAGCAGTAAGGGGGAAATAGAGAGTTCTCCTGAAGCCGGCTCTGAGGCGCGCACATACCGC

>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

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>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Coregonus;Coregonus laurettae

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Coregonus;Coregonus laurettae

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>Eukaryota;Chordata;Actinopteri;Salmoniformes;Salmonidae;Coregonus;Coregonus laurettae

CAAAGGCTTGGTCCTGACTTTATTATCAGCTTTAACTGAACTTACACATGCAAGTCTCCGCACTCCTGTGAGGATGCCCTTAATCCCCTGCCCGGGGACGAGGAGCCGGCATCAGGCACGCCCCGGCAGCCCAAGACGCCTTGCTAAGCCACACCCCCAAGGAAACTCAGCAGTGATAGATATTAAGCTATAAGCGAAAGCTTGACTTAGTTAAGGTTAAGAGGGCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCTAGTTGATAATTACCGGCGTAAAGAGTGGTTAGGAATTATATTTAATAAAGCCGAACACCCCCTTGGCTGTCATACGCACCTGGGGGCACGAAGCCCCACTGCGAAAGCAGCTTTAATCAACACCTGAACCCACGACAGCTATGACACAAACTGGGATTAGATACCCCACTATGCCTAGCCGTAAACTTTGATGGAAACATACAACTAACATCCGCCAGGGAACTACAAGCGCCAGCTTAAAACCCAAAGGACTTGGCGGTGCCTCAGACCCACCTAGAGGAGCCTGTTCTAGAACCGATAACCCCCGTTCAACCTCACCACCTCTTGTTTTCCCCGCCTATATACCACCGTCGTCAGCTTACCCTGTGAAGGATTTATAGTAAGCAAAATGGGCATGACCCAAAACGTCAGGTCGAGGTGTAGCGCATGGGGTGGGAAGAAATGGGCTACATTCTCTAAATTAGAGCATTACGAACCACGCTGTGAAACCAGCGTCCGAAGGTGGATTTAGCAGTAAATAGAAAGCAGAGAGTTCTCTTGAAACTGGCTCTGAGGCGCGCACACACCGCCCGTCACTCTCCCCAAGTTCAATCTACCCTTCTAACTAAGAAGTTAACCGAACAAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGAATAAC

>Eukaryota;Chordata;Actinopteri;Perciformes;Sticheidae;Acantholumpenus;Acantholumpenus mackayi

CAAAGGCTTGGTCCTGACTTTACTATCAACTTTAGCTAAACTTACACATGCAAGTATCCGCACTCCTGTGAGAATGCCCTACAGTTCCCCGCCCGGGAACAAGGAGCTGGTATCAGGCACATTCCTAGTGAGCCCACGACGCCTTGCTTAGCCACACCCTCAAGGGAACTCAGCAGTGATAGACATTAAGCCATAAGTGAAAACTTGACTTAGTCAAAGCTAAGAGGGCCGGTAAAACTCGTGCCAGCCACCGCGGTTATACGAGAGGCCCAAGTTGACAGACATCGGCGTAAAGGGTGGTTAAGTTAAATTATAAACTAAAGCCGAACATCCTCAAGGCTGTTATACGCACCCGAAGATAAGAAGTTCAACCACGAAGGTGGCTTTATTTAGTCTGAACCCACGAAAGCTACGGCACAAACTGGGATTAGATACCCCACTATGCCTAGCCCTAAACATTGATAGTAACCTACGCCCACTATCCGCCTGGGAACTACGAGCATCAGCTTAAAACCCAAAGGACTTGGCGGTGCTTTAGATCCACCTAGAGGAGCCTGTTCTAGAACCGATAACCCCCGTTCAACCTCACCTTTCCTTGTTTTCCCCGCCTATATACCGCCGTCGTCAGCTTACCCTGTGAAGGTTAAATAGTAAGCAAAACTGGTAAAACCCCAAACGTCAGGTCGAGGTGTAGCGTATGGGAAGGGAAGAAATGGGCTACATTCGCTATTATAGCGTATACGGACGATGCACTGAAACGTTCATCTGAAGGAGGATTTAGCAGTAAGCAGGAAATAGAGTGTTCCGCTGAAATTGGCCCTGAAGCGCGCACACACCGCCCGTCACTCTCCCCAAGCCCACCAACCTAATTAACTAAACCCTAATAACCGCAAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGAAAAAT

>Eukaryota;Chordata;Actinopteri;Perciformes;Sticheidae;Acantholumpenus;Acantholumpenus mackayi

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7/12/25

Begin at line 27176

>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

TATACGAGTGGCCCAAGTTGAAGGTTACCGGCGTAAAGAGTGGTTAGGGAAATAATAAACTAAAGCCGAACCACGAAAGTAACTTTACCATAAACTGAGTACACGACAACTAAG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAGAACAACCACGAAAGCTACG

>Eukaryota;Chordata;Mammalia;Artiodactyla;Monodontidae;Delphinapterus;Delphinapterus leucas

CCAGCTGTAAAAAGCCATAATTAAATTTAAGCCGAACCACGAAAGTAACTTTACCATAAACTGAGTACACGACAACTAAGACCCAAACTGGGAT

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

CATACGATTAACCCAAACTAATAGGCCCTCGGCGTAAAGCGTGTTAAAGATCAGCCCACACTAAAGCTAAAACCTAACCAAGCCGTAAAAAGCTACCGTTAACATAAAATAAACCACGAAAGCCATA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

CATACGATTAACCCAAACTAATAGGCCCTCGGCGTAAAGCGTGTTAAAGATCAGCCCACACTAAAGCTAAAACCTCTGATTCCACGAAAGCCATA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

TGCCAGCCGTAAAAAGCTACCGTTAACATAAAATAAACCACGAAAGTGACTTTACTAATTCTGACTGCACGATAGCTAAGATCCAAACTGGGATTA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

CATACGATTAACCCAAACTAATAGGCCCTCGGCGTAAAGCGTGTTAAAGATCAGCCCACACTAAAGCTAAAACCTAACCAAGCCGTA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

ACCAAGCCGTAAAAAGCTACCGTTAACATAAAATAAACCACGAAAGTGACTTTACTAATTCTGACTGCACGATAGCTAAGATCCAAACTGGGATTA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

TATACGAGAGGCCCACACTAAAGCTAAAACCTAACCAAGCCGTAAAAAGCTACCGTTAACATAAAATAAACCACGAAAGTGACTTTACTAATTCTGACTGCACGATAGCTAAG

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Pusa

ATAGGCCCTCGGCGTAAAGCGTGTTAAAGATCAGCCCACACTAAAGCTAAAACCTAACCAAGCCGTAAAAAGCTACCGTTAACATAAAATAAACCACGAAAGTGACTTTACTAATTCTGACTGCACGATAGCTAAG

>Eukaryota;Chordata;Mammalia

CCACCCCGCTCACCCTCGCCCCTGCCAGGGCACCCGCCTGCGCCTGCCCGGTCCCCAAGGCTGCGCCGAGGCCAGTCGGCTGACA

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAAGCTACG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAAGCTAAG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAGAACAACCACGAGAGCTGGG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGACAACTAAG

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGACCCTAGTTGATATACTCGGCGTAAAGAGTGGTTATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAGAACAACCACGAAAGTTGCCCTAAAACCTCTGATTCCACGAAAGCCATA

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAAGAACAACCACGAAAGCCATA

>Eukaryota;Chordata;Actinopteri;Gadiformes;Gadidae;Eleginus;Eleginus gracilis

TATACGAGAGGCCCAAATTGATGAAAAACGGCGTAAAGCGTGGTTAAGAAAATAAGAGAAAAATATGGCCGAACAGCTTCAAAGCAGTTATACGCATTCGAAGCCACGAGAGCTGGG

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Erignathus;Erignathus barbatus

GGTAAAACTCGTGCCAGCCACCGCGGTCATACACAAACTACGAAAGTGACTTTATCAACTCTGACCACACGATAGCTAAGACCCAAACTGGGATTAGATACCCCACT

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Erignathus;Erignathus barbatus

CATACGATTAACCCAAATTAATAGGCCCTCGGCGTAAAGCGTGTTAAGGATTAACTCACACTAAAGTTAAAATCTAACCAAGCCGTAAAAAGCTACCGTTAACATA

>Eukaryota;Chordata;Mammalia;Carnivora;Phocidae;Erignathus;Erignathus barbatus

TATACGAGAGGCCCAAGTTGACAGACTCCGGCGTAAAGAGTGGTTAAGTTAAAATCTAACCAAGCCGTAAAAAGCTACCGTTAACATAAAACAAACTACGAAAGTGACTTTATCAACTCTGACCACACGATAGCTAAG

>Eukaryota;Chordata;Mammalia;Artiodactyla;Monodontidae;Delphinapterus;Delphinapterus leucas

AAAACTCGTGCCAGCCATAATTAAATTTAAGCCGAACCACGAAAGTAACTTTACCATAAACTGAGTACACGACAACTAAGACCCAAACTGGGATTAGATACCCC

>Eukaryota;Chordata;Mammalia;Artiodactyla;Monodontidae;Delphinapterus;Delphinapterus leucas

CATACGATTGACCCGAATTAATAGGCATCCGGCGTAAAGAGTGTCAAGGAACAATACAAAATAAAGTCAAGCTTTAATTACGCCTGACCCCACGACAGCTAAG

>Eukaryota;Chordata;Mammalia;Artiodactyla;Monodontidae;Delphinapterus;Delphinapterus leucas

TAAGCTGTAAAAAGCCATAATTAAATTTAAGCCGAACCACGAAAGTAACTTTACCATAAACTGAGTACACGACAACTAAGACCCAAACTGGGATTAGATACCCC

>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

TATACGAGTGGCCCAAGTTGAAGGTTACCGGCGTAAAGAGTGGTTAGGGAAATAATAAACTAAAGCCGAACACCCTCTAGGCTGTTATACGCTTCTGAGGGTACGAAGCCCCACTACGAAAGCTACG

>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Osmerus;Osmerus mordax

TATACGAGTGGCCCAAGTTGAAGGTTACCGGCGTAAAGAGTGGTTAGGGAAATAATAAACTAAAGCCGAACACCCTCTAGGCTGTTAT

>Eukaryota;Chordata;Actinopteri;Osmeriformes;Osmeridae;Hypomesus;Hypomesus olidus

TATACGAGTGGCCCAAGTTGAAAGTTACCGGCGTAAAGAGTGGTTAGGGAGACAATAAACTAAAGCCGAACCACGAAAGTAACTTTACCATAAACTGAGTACACGACAACTAAG