# **List of valid taxa with chronostratigraphic assessment**

## ***Seuku emlongi Domning et al., 1986***

**Age range:** 30.60-28.00 Ma.

**Occurrence:** East Pacific, Yaquina Formation, Oregon, USA.

**Stratigraphic distribution:***Domning et al. (1986)* and *Beatty & Cockburn (2015)* considered the Yaquina Formation as the Late Oligocene (Zemorrian). *Prothero et al. (2001b)* estimate the age of this Formation to be 30.60-28.00 Ma based on the magnetostratigraphy.

## ***Behemotops proteus Domning et al., 1986***

**Age range:** 30.60-23.70 Ma.

**Occurrence:** East Pacific, Sook Formation, Vancouver Island, Canada and Pysht Formation, Washington, USA.

**Stratigraphic distribution:**The Pysht Formation, *Prothero et al. (2001a)* gives age of 30.50-23.70 Ma based on magnetostratigraphy, but *Shipps et al. (2019)* assigned the more precise age of 30.60-28.30 Ma. The Sooke Formation is temporally comparable to the Pysht Formation with an age of 30.50-23.70 Ma (*Brandon et al., 1998; Prothero et al., 2008*).

## ***Behemotops katsuiei Inuzuka, 2000***

**Age range:** 27.40-23.80 Ma.

**Occurrence:** West Pacific, Morawan Formation, Hokkaido, Japan.

**Stratigraphic distribution:** Known only from upper tuffaceous siltstone of the Morawan Formation. The age is based on potassium-argon (K-Ar) dating and fission-track (FT) dating (*Matsui & Ganzawa, 1987*), which suggest a late Oligocene age of 27.4 ± 1.5 Ma (K-Ar)-23.8 ± 2.0 Ma (FT).

## ***Archaeoparadoxia weltoni Clark, 1991***

**Age range:** 24.00-20.40 Ma.

**Occurrence:** East Pacific, Skooner Gulch Formation, California, USA.

**Stratigraphic distribution:**According to *Clark (1991),* the age of this formation is approximately 24.00 Ma. However, other studies have assigned it to the Aquitanian stage (23.00-20.40 Ma) based on biostratigraphy (*Philips et al., 1976; Barboza et al., 2017*).

## ***Paleoparadoxia tabatai Tokunaga, 1939***

**Age range:** 23.80-9.00 Ma.

**Occurrence:** Fossil occurrences of *P. tabatai* range from the USA, Mexico and Japan (*e.g., Reinhart, 1959; Inuzuka, 2005*).

**Stratigraphic distribution:**The oldest record of *Paleoparadoxia* comes from Sankebetsu Formation, dated to 23.8±1.5-20.6±1.0 Ma based on fission-track (FT) dating (*Matsui & Kawabe, 2016*). The youngest record comes from Santa Margarita Formation assigned Tortonian (*Reinhart, 1959*), but numerical age is still debated (11.6-10 Ma?). Our study follows *Matsui & Tsuihiji (2019)* in assigning a minimum age of approximately 9.00 Ma.

## ***Neoparadoxia repenningi Domning & Barnes, 2007***

**Age range:** 14.00 Ma.

**Occurrence:** East Pacific, Ladera Formation, California, USA.

**Stratigraphic distribution:**Known from a single specimen found in the Ladera Formation, dated at 14.00 Ma based on the molluscan provincial stages (*Inuzuka, 2005*; *Domning & Barnes, 2007*).

## ***Neoparadoxia cecilialina Barnes, 2013***

**Age range:** 14.90-13.10 Ma.

**Occurrence:** East Pacific, Monterey Formation, California, USA.

**Stratigraphic distribution:**Known from a single specimen found in the Monterey Formation. *Barnes (2013)* assigned the age 11.00-10.00 Ma based on diatom stratigraphy. However, *Parham et al. (2022)* performed reassessment of this Formation based on diatom stratigraphy and faunal analysis, estimating its age to be 14.90-13.10 Ma.

## **Akan specimens (*Paleoparadoxia* sp. and *Neoparadoxia* sp.)**

**Age range:** 15.90-14.90 Ma.

**Occurrence:** West Pacific, Tonokita Formation, Hokkaido, Japan.

**Stratigraphic distribution:**Akan specimen found from one of the largest *Paleoparadoxia* fossil assemblage within the Tonokita Formation. *Urabe et al. (2003)* estimate the age of this Formation to be 15.90-14.90 Ma based on the diatom stratigraphy.

## ***Ashoroa laticosta Inuzuka, 2000***

**Age range:** 29.20-27.40 Ma.

**Occurrence:** West Pacific, Morawan Formation, Hokkaido, Japan.

**Stratigraphic distribution:** Known only from lower hared shale of the Morawan Formation. The age is based on fission-track (FT) dating and potassium-argon (K-Ar) dating (*Matsui & Ganzawa, 1987; Saito et al., 1988*), which suggest a late Oligocene age of 29.2 ± 3.3 Ma (FT)-27.4 ± 1.5 Ma (K-Ar).

## ***Cornwallius sookensis Cornwall, 1922***

**Age range:** 30.60-23.00 Ma.

**Occurrence:** North Pacific, Unalaska Formation, Unalaska Island, USA; East Pacific, Sook Formation, Vancouver Island, Canada; Yaquina Formation, Oregon, USA; San Gregorio Formation, Baja California Sur, Mexico and El Cien Formation, Baja California Sur, Mexico.

**Stratigraphic distribution:** The oldest record of *C. sookensis* comes from the Yaquina Formation, which *Prothero et al. (2001b)* estimated to date to 30.60-28.00 Ma based on magnetostratigraphy. The youngest fossil records are from the San Gregorio and El Cien formations, which *Kracht & Ganz (1998)* dated to 28.40-23.00 Ma.

## ***Ounalashkastylus tomidai Chiba et al., 2016***

**Age range:** 23.03 Ma.

**Occurrence:** North Pacific, Unalaska Formation, Unalaska Island, USA.

**Stratigraphic distribution:** *Jacobs et al. (2007)* dated the Unalaska Formation as between 24.10-13.00 Ma. *Chiba et al. (2016)* noted the locality falls near the Oligocene-Miocene boundary (23.03 Ma), or slightly younger.

## ***Desmostylus japonicus Tokunaga & Iwasaki, 1914***

**Age range:** 18.00-17.00 Ma.

**Occurrence:** West Pacific, Yamanouchi Formation, Gifu, Japan.

**Stratigraphic distribution:** The holotype of *D. japonicus* known from Yamanouchi Formation was deposited between 18.00-17.00 Ma based on diatomstratigraphy (*Kohno, 2000*). *Inuzuka et al. (1994)* assigned several specimens assigned *D. japonicus*, but did not provide any justification (*Matsui & Pyenson, 2023*). Therefore, our study follows only to the age of the holotype locality.

## ***Desmostylus hesperus Marsh, 1888***

**Age range:** 23.00-8.50 Ma.

**Occurrence:** Fossil occurrences of *D. hesperus* range from the USA, Mexico, Russia and Japan (*e.g., Reinhart, 1959; Ijiri & Kamei, 1961*).

**Stratigraphic distribution:** The oldest record of *D.hesperus* comes from Painted Sandstone Member of the ‘Vaqueros’ Formation assigned Aquitanian (23.00-20.40 Ma; *Mitchell & Repenning, 1963*). *Santos et al. (2016)* described the youngest record of *Desmostylus* from the Puente Formation, dated to 13.70-8.50 Ma (*Perham et al., 2022*). This fossil record suggests that *Desmostylus* may have existed until the late Miocene. Therefore, our study incorporates the record from the Puente Formation.

## ***Desmostylus (Vanderhoofius) coalingensis Reinhart, 1959***

**Age range:** 16.00-11.61 Ma.

**Occurrence:** East Pacific, Temblor Formation, California, USA.

**Stratigraphic distribution:** The classification of *D. coalingensis* is still debated (*e.g.,Inuzuka, 1994*; *Kohno, 2000*; *Santos et al., 2016*), and our study follows only to the age of the holotype locality. The holotype comes from Temblor Formation assigned 16.00-11.61 Ma (*Reinhart, 1959*).

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