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Proposed Updates to the List of Recognised Species of Cetaceans

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ABSTRACT

Addition of three species to the list is recommended based on recent literature. (*Orcaella brevirostris*) has been split into the Irrawaddy dolphin (*O. brevirostris*) and the Australian snubfin dolphin (*O. heinsohni*). *Sotalia fluviatilis* has been split into the riverine tucuxi (*S. fluviatilis*) and the marine "costero" (*S. guianensis*). Evidence to support both of these splits is convincing, and we recommend that they be recognized in the list. The existence of the Bryde's-whale-like species described in 2003 as *Balaenoptera omurai* has been confirmed with additional genetic (nuclear) data. While the species clearly exists, the nomenclature is still unsettled because the genetic identity of the holotype specimen of *Balaenoptera edeni* has not yet been determined. However, the name *B. omurai* is gaining wide usage in application to the new species, and we propose that it be used provisionally by the Scientific Committee pending the genetic identification of the *B. edeni* holotype. We recommend that India be urged to facilitate the identification. We recommend continued use of the name *Balaenoptera edeni* provisionally for both the "ordinary" large form and the small coastal form, recognising that further genetic and morphological research may justify recognition of two species: *B. brydei* and *B. edeni*. We also recommend that any new specimen be referred to *B. omurai* only after its mtDNA has been sequenced and found to support the identification.

INTRODUCTION

The Committee's List of Recognized Species of Cetaceans is reviewed by the Committee at varying intervals and published annually in the Journal of Cetacean Research and Management. The last update to the List was in 2005, when Perrin's beaked whale *Mesoplodon perrini* was added and the senior synonym *Mesoplodon traversii* (Gray, 1874) was substituted for *M. bahamondi* Reyes *et al.* 1995 and the common name changed from Bahamonde's beaked whale to strap-toothed whale (IWC 2006a)¹. Prior to that, in 2000 the Committee agreed to recognize three species of right whales, two species of minke whales, two species of bottlenose dolphins and only one species of

South Asian river dolphin (Perrin and Brownell 2001). Recent literature suggests that three additional species should now be added.

AUSTRALIAN SNUBFIN DOLPHIN (*ORCAELLA HEINSOHNI*)

The genus *Orcaella* has been considered to be monotypic, with the range of *O. brevirostris* including the shallow protected coastal waters and some freshwater rivers and lakes of eastern and northern Australia, the island of New Guinea, Southeast Asia, and South Asia to the eastern coast of India. However, Beaseley *et al.* (2005) have documented a morphological and genetic discontinuity between the dolphins in the coastal waters of Australia and New Guinea and those in the rest of the range. They identified a distributional gap between the two ranges corresponding to the deep-water gap between the shallow waters of the Sahul and Sunda Shelves. The two forms differ in height of dorsal fin, presence of a median dorsal groove, presence of a dorsal cape and several skull characters. They are separated by 17 diagnostic sites within a 403-base-pair segment of the mtDNA control region, greater than the genetic distance between other recognized species pairs such as *Stenella coeruleoalba* and *Delphinus delphis*. They qualify as allopatric phylogenetic species (e.g., under the guidelines suggested by Helbig *et al.* 2002) and have been redescribed as *O. heinsohni* from Australia and New Guinea and *O. brevirostris* from Southeast Asia and South Asia.

The species is named for Dr. George Heinsohn, in "recognition of his pioneering work on northeast Australian odontocetes...." (Beaseley *et al.* 2005).

COSTERO (*SOTALIA GUIANENSIS*)

The status of the nominal species in *Sotalia* has been debated for some time. The most recent consensus (Flores 2002) has been that the genus is monotypic, with the tucuxi, *S. fluviatilis*, containing two ecotypes: a riverine form and a marine form (recognized by Rice (1998) as the subspecies *S. f. fluviatilis* and *S. f. guianensis*). The former inhabits the Amazon River basin and the latter the nearshore tropical waters of the Caribbean and Atlantic coasts of Central and South America. However, Caballero *et al.* (2007) now recommend elevation of the two forms to species status, and the evidence to support this is considerable. They summarize the published results of recent studies by others that recommended recognition of two species based on modal differences in morphology and mtDNA sequences and present new evidence from ten nuclear and three mitochondrial genes supporting two species under the Genealogical/Linear Concordance Species Concept (a variant of the Phylogenetic Species Concept) and the criterion of irreversible divergence (Reeves *et al.* 2004). They suggest the common name "costero" for the marine species.

OMURA'S WHALE (*BALENOPTERA OMURAI*)

Wada *et al.* (2002) described *B. omurai* based on limited morphological and genetic data. In response to a request from IUCN, the Committee in 2004 reviewed its list of recognised species and a critique of *B. omurai* by Perrin and Brownell (2004) and concluded that inclusion of the species would be premature, particularly due to

uncertainties about the genetic identity of the holotype specimen of *B. edeni* (in a museum in Calcutta) and about the range of variation in the diagnostic morphological characters used. The Committee recommended that the Bryde's whale complex continue to be listed under the name *B. edeni* on a provisional basis (IWC 2005).

Sasaki *et al.* (2006) have confirmed the species status of Omura's whale based on the entire mitochondrial genome and short interspersed repetitive elements (SINEs). In phylogenetic analyses of the mtDNA data, *B. omurai* is the sister taxon to a clade containing the Bryde's whale and the sei whale, *B. borealis*. In a SINE tree, the blue whale, *B. musculus*, falls into the sister clade. The authors conclude that *B. omurai* represents an ancient lineage within the Balaenopteridae. The case is compelling, and we recommend that the species be included in the List of Recognised Species.

The identity and number of species in the Bryde's whale complex (Bryde's-like whales minus *B. omurai*) is still unclear. There is an "ordinary" Bryde's whale, with a worldwide distribution in the Pacific, Indian and Atlantic oceans, which grows to about 14m in length, and one or more smaller forms which tend to be more coastal in distribution. The taxonomic status of the smaller forms is unclear. Wada *et al.* (2003) advocated recognizing two species: *B. brydei* ("ordinary" Bryde's whale, described from South Africa) and *B. edeni* (small-form Bryde's whale, described from Myanmar). Based on phylogenetic analysis, they concluded that (their) *B. edeni*, represented by a specimen from Indonesia, with Omura's whale also lies outside the clade of sei and "ordinary" Bryde's whales for one mtDNA marker (control region) and hence proposed that it be regarded as a separate species, although statistical support for the phylogeny was weak. However, from an analysis of the full mtDNA genome, Sasaki *et al.* (2006) concluded that their specimen, with small-form Bryde's whales from southwestern Japan, Hong Kong and Australia, belongs to a sister clade of the "ordinary" Bryde's whales (i.e. more closely related to them than either is to the sei or Omura's whale). They agreed nonetheless that they should be classified as a separate species (*B. edeni*) from other Bryde's whales (*B. brydei*). However, the divergence is relatively shallow, and the two forms could reasonably still be considered subspecies. Until more specimens of the putative *B. edeni* (*sensu* Sasaki *et al.* 2006) from more locations have been analysed morphologically and genetically, using more markers, it is too early to settle the taxonomy of the Bryde's whale complex (exclusive of *B. omurai*); there may be one, two or more species, and/or subspecies, and intermediate forms may be found. We recommend that *B. edeni* continue to be used for the Bryde's whale complex provisionally, recognising that further research results may favor recognition of two species: *B. brydei* and *B. edeni*.

In addition, nomenclatural uncertainty remains until the specific identity of the *B. edeni* holotype (Anderson 1879) has been determined; this relates to the nomenclature of both Omura's whale and the Bryde's whale complex. However, the name *B. omurai* has gained some currency for Omura's whale, and we recommend that it be used provisionally pending the results of that determination. We also recommend that the Committee urge the Government of India to facilitate the genetic determination of the holotype specimen of *B. edeni* as soon as possible.

The range of *B. omurai* may be much larger than presently known (records are from southeastern Japan, the Philippines, the Solomon Is. and the eastern Indian Ocean). We recommend that any new specimen of a Bryde's-like whale be referred to *B. omurai*

or *B. edeni* only after its mtDNA has been sequenced and found to support the identification.

REFERENCES

- Beaseley, I., Robertson, K. M. and Arnold, P. 2005. Description of a new dolphin, the Australian snubfin dolphin *Orcaella heinsohni* sp. n. (Cetacea, Delphinidae). *Mar. Mamm. Sci.* 21:365—400.
- Caballero, S., Trujillo, F., Vianna, J. A., Barrios-Garrido, H., Montiel, M. G., Beltrán-Pedrerros, S., Marmontel, M., Santos, M. C., Rossi-Santos, M., Santos, F. R. and Baker, C. S. 2007. Taxonomic status of the genus *Sotalia*: species-level ranking for "tucuxi" (*Sotalia fluviatilis*) and "costero" (*Sotalia guianensis*) dolphins. *Mar. Mamm. Sci.* 23:358—386.
- Flores, P. A. C. 2002. Tucuxi *Sotalia fluviatilis*. Pages 1267—1269 In W. F. Perrin, B. Würsig and J. G. M. Thewissen (eds). *Encyclopedia of marine mammals*. Academic Press, San Diego, California.
- Helbig, A. J., Knox, A. G., Parkin, D. T., Sangster, G. and Collinson, M. 2002. Guidelines for assigning species rank. *Ibis* 144:518—525.
- IWC. 2005. Report of the Scientific Committee. *J. Cetacean Res. Manage.* 7 (supplement):1—391.
- IWC. 2006a. Report of the Scientific Committee. *J. Cetacean Res. Manage.* 8 (supplement): 1—383.
- IWC. 2006b. Guide for authors. *J. Cetacean Res. Manage.* 8:v—xii.
- Perrin, W. F. and Brownell, R. L., Jr. 2001. Appendix 1 [to Annex U]. Update of the list of recognised species of cetaceans. Report of the Scientific Committee. *J. Cetacean Res. Manage.* 3 (Supplement):364-365.
- Perrin, W. F. and Brownell, R. L., Jr. 2004. Critique of the new whale species *Balaenoptera edeni* Wada et al., 2003. IWC meeting document SC/56/O4, 5pp.
- Reeves, R. R., Perrin, W. F., Taylor, B. L., Baker, C. S. and Mesnick, S. L. 2004. Report of the Workshop on Shortcomings of Cetacean Taxonomy in Relation to Needs of Conservation and Management, April 30—May 2, 2004 La Jolla, California. *NOAA Tech. Memo. NMFS NOAA-TM-NMFS-SWFSC-363*:1—94.
- Rice, D.W. 1998. Marine mammals of the world. Systematics and distribution. *Soc. Mar. Mammal. Spec. Pub.* 4:1—231.
- Sasaki, T., Nikaido, M., Wada, S., Yamada, T. K., Cao, Y., Hasegawa, M. and Okada, N. 2006. *Balaenoptera omurai* is a newly discovered baleen whale that represents an ancient evolutionary lineage. *Mol. Phylogenet. Evol.* 41:40—52.
- Wada, S., Oishi, M. and Yamada, T. K. 2003. A newly discovered species of living baleen whale. *Nature* 426:278—281.

¹These changes, however, were not reflected in the most recent publication of the list (IWC 2006b).