Rapid Communication

Neotrygon vali **(Myliobatoidei: Dasyatidae), a new blue-spotted maskray from the Solomon archipelago described from its DNA barcode**

Philippe Borsa*

* **Corresponding author: Philippe Borsa**, Institut de recherche pour le développement (IRD), UMR 250 "Ecologie marine tropicale des océans Pacifique et Indien", BP A5, 98848 Nouméa, New Caledonia. Email: philippe.borsa@ird.fr; philippeborsa@gmail.com

Abstract: The blue-spotted maskray from Guadalcanal Island (Solomon archipelago) is morphologically distinct from *Neotrygon kuhlii* with which it was previously confused and it is genetically distinct from all other species in the genus *Neotrygon*. It is here described as a new species, *Neotrygon vali* sp. nov., on the basis of its nucleotide sequence at the *cytochrome oxidase 1* (*CO1*) gene locus. It is unique in the genus *Neotrygon* by the possession of nucleotide T at nucleotide site 420 and G at nucleotide site 522 of the *CO1* gene.

Keywords: new species, *CO1* gene, molecular diagnosis, taxonomy

1 Introduction

Genetic studies of the dasyatid genus *Neotrygon* Castelnau, 1873 [1] or maskrays have pointed to the possible occurrence of several species complexes [2-7]. This genus currently comprises 10 nominal species: *N. annotata* (Last, 1987) [8], *N. australiae* Last, White and Séret, 2016 [9], *N. caeruleopunctata* Last, White and Séret, 2016 [9], *N. kuhlii* (Müller and Henle, 1841) [10], *N. leylandi* (Last, 1987) [8], *N. ningalooensis* Last, White and Puckridge, 2010 [11], *N. orientale* Last, White and Séret, 2016 [9], *N. picta* (Last, 1987) [8], *N. trigonoides* (Castelnau, 1873) [1] and *N. varidens* (Garman, 1885) [12]. The blue-spotted maskray, previously *N. kuhlii*, consists of up to eleven lineages representing separate species [4, 6, 7, 13] of which four (*N. australiae*, *N. caeruleopunctata*, *N. orientale*, *N. varidens*) have so far been formally described. One of the paratypes of *N. kuhlii*, a specimen from Vanikoro in the Santa Cruz archipelago, has been recently designated as lectotype [9], although the pigmentation patterns of the Vanikoro maskray, thus now the typical *N. kuhlii*, do not fit those of the original description of the species by J. Müller and F.G.J. Henle [10, 14]. In their re-description of *N. kuhlii*, P.R. Last and co-authors [9] hastily included a fresh specimen collected from Guadalcanal Island in the Solomon archipelago, over 800 km away from Vanikoro, the type-locality. Pigmentation patterns clearly distinguish the Guadalcanal maskray from *N. kuhlii* from Vanikoro [14], but not from other species previously under *N. kuhlii* except *N. varidens* [12].

Mitochondrial DNA sequence information contributes valuable diagnostic characters to the taxonomic description of species and is fundamental to the description of cryptic species [15]. The taxonomic value of mitochondrial DNA sequences has been demonstrated in morphologically intractable species complexes in Elasmobranchs such as *Himantura uarnak* [3, 16-18] or *N. kuhlii* [3-6, 13]. Based on the partial sequence of the *CO1* gene, the objectives of the present paper are (1) to identify diagnostic characters that distinguish the Guadalcanal maskray from other species in the genus *Neotrygon*; and (2) to describe it as a new maskray species, a necessary step towards clarifying the intricate taxonomy of species in this genus.

2 Methods

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Because *N. kuhlii* from Vanikoro, the type-locality, has not yet been analyzed genetically, pigmentation patterns were used to distinguish it from the Guadalcanal maskray, following [5]. Two specimens were examined including specimen no. CSIRO H 7723-01 (p. 539 of [9]) and two live specimens photographed underwater, one by J.E. Randall ([19]: p. 18) and the other one by M.A. Rosenstein (Fig. 1). The diameter of ocellated blue spots on the dorsal side of the disk was measured on the photographs, relative to disk width. Ocellated blue spots were qualified as "small" when their maximum diameter was ≤ 2% disk width (DW), "medium" when ≤ 4% DW and "large" when > 4% DW [5]. On Randall's [19] picture and on Fig. 1, DW was deduced from disk length (DL; measured from tip of snout to rear tip of pelvic fin) from the relationship DW = 1.13 DL, obtained from measurements on specimen no. CSIRO H 7723-01, a good photograph of which is available from [9]. Dark speckles (≤ 1% DW) and dark spots (> 1% DW) were also counted on the dorsal surface of the disk [5]. The counts did not include those speckles and spots located within the dark band around eyes that forms the mask [5]. The presence or absence of a scapular blotch was checked [5].

The Guadalcanal maskray was compared to other species in the genus *Neotrygon* based on nucleotide sequences of the *CO1* gene. A total of 205 complete or partial *CO1* gene sequences were found in the literature [2, 4-6, 9, 20, 21] and compiled into a single FASTA file which was edited under BioEdit [22]. The recently-described *N. australiae* and *N. caeruleopunctata* correspond to, respectively, clades *V* and *VI* of [4]. Clade *IV* of [4] included a distinct sub-clade that corresponds to *N. varidens*. All other haplotypes of clade *IV* of [4], together with GenBank no. JN184065 [21] correspond to *N. orientale*, except a distinct haplotype (GenBank no. AB485685) [20] here referred to as the Ryukyu maskray. Two haplotypes from the Indian Ocean (GenBank nos. JX263421 and KC249906) belonging to Haplogroup *I* of [4, 7] are here referred to as the Indian Ocean maskray. Sample sizes were: *N* = 8 for *N. annotata*; *N* = 11 for *N. australiae*; *N* = 12 for *N. caeruleopunctata*; *N* = 7 for *N. leylandi*; N = 1 for *N. ningalooensis*; *N* = 68 for *N. orientale*; *N* = 5 for *N. picta*; *N* = 18 for *N. trigonoides*; *N* = 1 for *N. vali* sp. nov. (holotype); *N* = 11 for *N. varidens*; *N* = 19 for clade *II* of [4]; *N* = 17 for clade *III* of [4]; *N* = 14 for clade *VII* of [4]; *N* = 10 for clade *VIII* of [4]; *N* = 1 for the Guadalcanal maskray; *N* = 2 for the Indian Ocean maskray; and *N* = 1 for the Ryukyu maskray. GenBank accession numbers for all the foregoing sequences are provided in Supplementary Table S1.

Average nucleotide divergences between pairs of sequences within a lineage and net nucleotide divergences between lineages were estimated according to the Tamura-3 parameter substitution model [23], the most likely model as inferred from the Bayesian information criterion using Mega6 [24]. Variable nucleotide sites were determined automatically using Mega6. Diagnostic nucleotide sites at the *CO1* gene locus that distinguish the Guadalcanal maskray from all other lineages in the genus *Neotrygon* were then selected visually on the ExCel (Microsoft Corporation, Redmond WA) file generated by Mega6.

3 Results and Discussion

Pigmentation patterns on the dorsal side of each pectoral fin consisted of a variable number (*N* = 4-21) of small ocellated blue spots, a small number (*N* = 1-6) of medium-sized ocellated blue spots, 3-7 dark speckles and no scapular blotch (Table 1). The three Guadalcanal maskray specimens available for the present study thus lacked the dark spots and the scapular blotch that are present in *N. kuhlii* [14]. Given the relevance of pigmentation patterns in diagnosing species in the genus *Neotrygon* [5, 11, 25] and more generally in stingrays [16, 18], this observation alone suffices to reject the hypothesis that the Guadalcanal maskray might be synonymous with *N. kuhlii* as assumed previously by [9].

The maximum-likelihood tree of *CO1* haplotypes (Fig. 2) confirmed the monophyly of species in the genus *Neotrygon*, except *N. picta* which was paraphyletic with *N. leylandi*. Also, no distinction was evident between haplotypes of *N. annotata* and those previously assigned to a related undescribed lineage provisionally referred to as "*Neotrygon* cf. *annotata*" [6]. Estimates of nucleotide divergence at the *CO1* locus among species and deep lineages (cryptic species remaining undescribed [13]) in the genus *Neotrygon* ranged from 0.015 to 0.301 (Table 2). They ranged from 0.015 to 0.038 among the four already-described blue-spotted maskray species (*N. australiae*, *N. caeruleopunctata*, *N. orientale*, *N. varidens*) previously under *N. kuhlii* (Table 2). Nucleotide divergence between the Guadalcanal maskray and other species in the genus *Neotrygon* was ≥ 0.049 (Table 2). Meanwhile, nucleotide divergence estimates within lineages ranged from 0 in *N. caeruleopunctata* to 0.011 in *N. orientale* and in clade *II* of [4] (Table 2), thus systematically lower than inter-specific estimates. The Guadalcanal maskray possessed nucleotides at two nucleotide sites at the *CO1* locus, that were absent in *N. annotata*, *N. australiae*, *N. caeruleopunctata*, *N. leylandi*, *N. ningalooensis*, *N. orientale*, *N. picta*, *N. trigonoides*, *N. varidens*, and in 6 yet-undescribed blue-spotted maskray species sampled from the Indian Ocean, the Andaman Sea, the Banda Sea, the Ryukyu archipelago and West Papua [4, 7, 13] (Supplementary Table S1). Nucleotide sequences at the *CO1* locus therefore provided diagnostic characters for the Guadalcanal maskray, relative to all other species in the genus *Neotrygon*. The Guadalcanal maskray is here considered to represent a distinct species, based on its distinct phylogenetic placement, its level of nucleotide distance with other species in the genus *Neotrygon*, and its unique nucleotide composition at the *CO1* locus. No name being available for the Guadalcanal maskray [26], it is here described as a new species.

4 Taxonomy

Maskrays, genus *Neotrygon* Castelnau, 1873 belong to family Dasyatidae Jordan, 1888 [27]. The type species of the genus is *N. trigonoides* [1] previously resurrected from synonymy with *N. kuhlii* [5].

Neotrygon vali sp. nov. http://zoobank.org/A5BE7B5D-64A3-40C2-AD44-63ECAE060FF6. Previously referred to as: Guadalcanal maskray [13, 14]; erroneously placed under *Neotrygon kuhlii* by [9]. Specimen CSIRO H 7723-01, a female 295 mm DW, is here chosen as the holotype of *Neotrygon vali* sp. nov. This specimen was obtained on 7 May 2015 by [9] from the Plaza fish market, Honiara, Guadalcanal Island. The type locality is Guadalcanal Island in the Solomon archipelago.

The morphological description of the holotype of *Neotrygon vali* sp. nov. has been published previously (pp. 535-541 of [9]). This includes 11 meristic counts and 41 measurements made on the body (table 1 of [9]). Pigmentation patterns on the dorsal side of disk consist of a variable number of small ocellated blue spots and a moderate number of medium-sized ocellated blue spots, few dark speckles and no scapular blotch (present work). The *CO1* gene sequence of *Neotrygon vali* sp. nov. is unique among species in the genus *Neotrygon* as it clusters with no one of its homologues in congeneric species (Fig. 2). The partial *CO1* gene sequence of the holotype, comprised between homologous nucleotide sites nos. 95 and 696 of the *CO1* gene in *N. orientale* (GenBank no. JN184065; [21]) is 5'- C T G G C C T C A G T T T A C T T A T C C G A A C A G A A C T A A G C C A A C C A G G C G C T T T A C T G G G T G A T G A T C A G A T T T A T A A T G T A A T C G T T A C T G C C C A C G C C T T C G T A A T A A T C T T C T T T A T A G T A A T A C C A A T T A T A A T C G G T G G G T T T G G T A A C T G A C T A G T G C C C C T G A T G A T T G G A G C T C C G G A C A T A G C C T T T C C A C G A A T A A A C A A C A T A A G T T T C T G A C T T C T G C C T C C C T C C T T C C T A T T A C T G C T A G C C T C A G C A G G A G T A G A A G C C G G A G C C G G A A C A G G T T G A A C A G T T T A T C C T C C A T T A G C T G G T A A T C T A G C A C A T G C T G G A G C T T C T G T G G A C C T T A C A A T C T T C T C T C T T C A C C T A G C A G G T G T T T C C T C T A T T C T G G C A T C C A T C A A C T T T A T C A C A A C A A T T A T T A A T A T A A A A C C G C C T G C A A T C T C C C A A T A T C A A A C C C C A T T A T T C G T C T G A T C C A T C C T T G T T A C A A C T G T G C T T C T C C T G C T A T C C C T A C C A G T C C T A G C A G C T G G C A T T A C T A T A C T C C T C A C A G A C C G A A A T C T T A A T A C A A C T T T C T T T G A T C C A G C T G G A G G A G G A G A T C C T A T T C T T T A C -3' [9].

Based on Supplementary Table S1, *Neotrygon vali* sp. nov. is distinguished from all other species in the genus *Neotrygon* except *N. kuhlii* for which no genetic information is available yet, by the possession of nucleotide T at nucleotide site 420 and G at nucleotide site 522 of the *CO1* gene. The Guadalcanal maskray is distinct from *N. kuhlii* by the lack of dark spots (> 1% DW) and by the lack of a pair of scapular blotches on the dorsal side.

Apart from the type locality (Honiara on the northern coast of Guadalcanal Island in the Solomon archipelago), the distribution of *Neotrygon vali* sp. nov. is likely to be confined within the part of Melanesia east of Cenderawasih Bay in West Papua, where the lineage present is *Neotrygon* clade *VIII* [4] and west of the Santa Cruz archipelago, where the species present is *N. kuhlii*.

Etymology: "vali" is the word for stingray in Gela, one of the languages spoken in Guadalcanal [28]. Epithet *vali* is intended to refer to the common name of the species among Guadalcanal fishers and it is a noun in apposition [29]. Proposed vernacular names: Guadalcanal maskray (English); vali Guadalcanal (Gela); pastenague masquée à points bleus de Guadalcanal (French).

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Table 1. Pigmentation patterns on left or right dorsal side of disk in Guadalcanal maskray *Neotrygon vali* sp. nov. including numbers of ocellated blue spots, number of dark speckles or spots and presence or absence of a scapular blotch. Ocellated blue spots qualified as *small* when diameter ≤ 2% disk width (DW); *medium* when > 2% DW and ≤ 4% DW and *large* when > 4% DW; *dark speckles* ≤ 1% DW; *dark spots* > 1% DW [5]. *N*: number of speckles or spots.

Specimen,	*N* ocellated spots			*N* dark	*N* dark	Scapular
Side of disk	Small	Medium	Large	speckles	spots	blotch
CSIRO H7723-01						
left	2	1	0	3	0	no
right	4	1	0	6	0	no
Randall (2005: 18)						
left	11	4	0	6	0	no
Fig. 1						
left	21	6	0	7	0	no

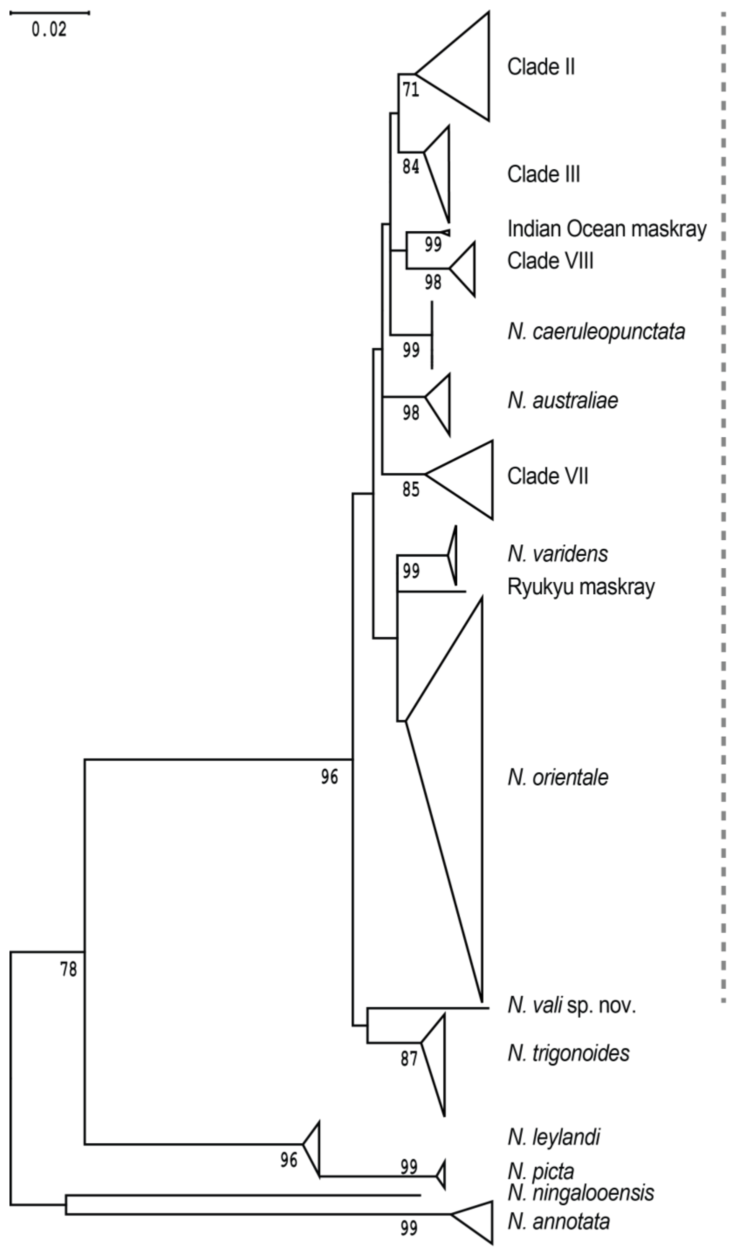
Table 2. *Neotrygon* spp. Estimates of net nucleotide divergence (Tamura-3 parameter model; MEGA6 [24]) between lineages. Clades *II*, *III*, *VII* and *VIII* were defined by [4]. *N* sample size; *ns* number of base substitutions per site from averaging over all sequence pairs within each lineage (Tamura-3 parameter model; MEGA6).

No.	Lineage	*N*	*ns*	Lineage no.														
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*N. annotata*	8	0.004															
2	*N. australiae*	11	0.006	0.268														
3	*N. caeruleopunctata*	12	0.000	0.278	0.028													
4	*N. leylandi*	7	0.002	0.243	0.167	0.179												
5	*N. ningalooensis*	1	-	0.229	0.271	0.267	0.201											
6	*N. orientale*	68	0.011	0.236	0.029	0.028	0.160	0.233										
7	*N. picta*	5	0.001	0.286	0.190	0.205	0.034	0.213	0.174									
8	*N. trigonoides*	18	0.003	0.250	0.047	0.044	0.178	0.212	0.036	0.174								
9	*N. vali* sp. nov.	1	-	0.301	0.054	0.049	0.192	0.235	0.053	0.193	0.054							
10	*N. varidens*	11	0.001	0.240	0.036	0.038	0.161	0.269	0.015	0.189	0.047	0.064						
11	Clade *II*	19	0.011	0.288	0.027	0.021	0.199	0.263	0.029	0.214	0.035	0.034	0.050					
12	Clade *III*	17	0.003	0.282	0.027	0.021	0.198	0.266	0.024	0.203	0.044	0.038	0.016	0.043				
13	Clade *VII*	14	0.008	0.262	0.028	0.027	0.154	0.220	0.028	0.194	0.039	0.039	0.027	0.027	0.050			
14	Clade *VIII*	10	0.002	0.249	0.028	0.022	0.150	0.251	0.034	0.175	0.037	0.044	0.025	0.027	0.025	0.056		
15	Indian O. maskray	2	0.002	0.271	0.031	0.026	0.169	0.245	0.031	0.201	0.052	0.043	0.024	0.025	0.018	0.020	0.049	
16	Ryukyu maskray	1	-	0.246	0.039	0.038	0.173	0.250	0.024	0.187	0.039	0.032	0.028	0.038	0.039	0.038	0.049	0.041

Captions to figures

Figure 1. Guadalcanal maskray *Neotrygon vali* sp. nov. showing the pigmentation patterns that differentiate it from *N. kuhlii* from Vanikoro [14]. Photographed by M.A. Rosenstein near Mbike Wreck (09°06'S 160°11E), November 2014.

Figure 2. *Neotrygon* spp. Maximum-likelihood tree (Tamura 3-parameter model; MEGA6 [24]) of nucleotide sequences at the *CO1* locus (*N* = 205), compiled from several sources [2, 4-6, 9, 20, 21] showing the phylogenetic placement of the Guadalcanal maskray *Neotrygon vali* sp. nov. Numbers at nodes are bootstrap scores (500 bootstrap resampling runs under MEGA6). Dotted vertical line: blue-spotted maskrays previously under *N. kuhlii* [7].


0.02
Clade II
71
84
Clade III
Indian Ocean maskray
99
Clade VIII
98
N. caeruleopunctata
99
N. australiae
98
Clade VII
85
N. varidens
99
Ryukyu maskray
N. orientale
96
78
N. vali sp. nov.
N. trigonoides
87
N. leylandi
96
99
N. picta
N. ningalooensis
N. annotata
99

Supplementary Table S1. Variable nucleotide sites at the *CO1* locus that distinguish *Neotrygon vali* sp. nov. from congeneric species.

Table S1. Variable nucleotide sites at the *CO1* locus that distinguish *Neotrygon vali* sp. nov. from congeneric species. Nucleotides diagnostic of *N. vali* sp. nov. are highlighted in blue. Nucleotide sites numerotated starting from the origin of the *CO1* gene in *N. orientale*, GenBank accession no. JN184065. The fragment used in this alignment is 519 bp long, spanning nucleotide sites 106-624.

Species, GenBank no.	Nucleotide site no.																																																												
	111	114	121	124	126	128	129	131	132	135	138	141	142	144	147	153	156	159	160	165	171	172	174	177	186	192	193	198	201	210	216	222	225	226	228	231	234	237	240	243	246	249	250	252	258	261	267	270	273	276	279	280	285	290	291	294	297	300	305	306	309	318
N. annotata																																																														
EU398727	C	C	G	C	A	G	T	A	A	A	G	C	C	A	A	T	C	A	A	C	A	A	C	C	T	C	G	A	T	A	A	T	A	A	T	T	G	T	T	C	G	G	G	A	A	A	G	C	A	T	G	G	T	G	A	A	T	T	G	T	T	C
EU398728	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398729	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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EU398731	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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N. australiae																																																														
DQ108184	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
JQ765536	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
JQ765537	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
JX304874	T	.	.	T	.	.	.	.	.	.	C	T	T	.	G	.	T	.	.	T	T	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
JX304875	T	.	.	T	.	.	.	.	.	.	C	T	T	.	G	.	T	.	.	T	T	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250626	T	.	.	T	.	.	.	.	.	.	C	T	T	.	G	.	T	.	.	T	T	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250627	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250632	T	.	.	T	.	.	.	.	.	.	C	T	T	.	G	.	T	.	.	T	T	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250635	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250642	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
KC250645	T	.	.	T	.	.	C	.	.	.	T	T	T	.	G	.	T	.	.	T	T	.	.	T	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	G
N. caeruleopunctata																																																														
EU398736	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
EU398742	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
EU398743	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
EU398744	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
EU398745	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
EF609342	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
JX304860	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
KC250629	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
KC250630	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
KC250634	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
KC250637	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
KC250639	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	G	C	C	.	.	.	A
N. leylandi																																																														
EU398746	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
EU398747	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
EU398748	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
EU398749	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
EU398750	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
EU398751	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
JQ765538	.	.	.	.	.	.	C	.	.	.	A	T	T	.	.	.	T	.	.	T	.	.	T	T	.	.	.	.	.	.	.	.	.	.	C	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	A	.	.	.	.	.	.	.	.	.	C	G
N. ningalooensis																																																														
JQ765539	T	.	.	.	.	.	C	.	.	.	C	T	.	.	.	.	T	G	.	T	.	.	.	T	.	.	.	.	.	.	.	.	.	.	C	C	A	C	C	T	A	.	.	C	.	.	A	.	.	.	A	.	.	.	.	.	.	.	.	C	C	.
N. orientale																																																														
EU398737	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
EU398738	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
EU398739	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
EU398740	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
EU398741	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	C	.	.	.	.	C	.	.	.	A

GU673709	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JN184065	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	A	.	.	T	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304829	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304830	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304831	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304832	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304833	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304834	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304835	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304836	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304837	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304838	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304839	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304840	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304841	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304842	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304843	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304844	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304845	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304847	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304848	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304849	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	T	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304850	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304851	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304852	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304853	T	.	.	.	.	.	C	C	.	C	.	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	A	.	.	.	C	T	.	.	A
JX304854	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304855	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304856	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	C	.	.	.	.	.	C	.	.	.	A
JX304857	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304858	T	.	.	.	.	.	C	.	.	C	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304859	T	T	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	G	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304861	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304862	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304863	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	T	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304864	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304865	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	T	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304866	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	T	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304867	T	.	.	.	.	.	C	C	C	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304869	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	T	.	.	C	.	G	.	.	.	C	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304870	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	T	.	.	C	.	G	.	.	.	C	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304871	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	T	.	.	C	.	G	.	.	.	C	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304872	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	T	.	.	C	.	G	.	.	.	C	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304873	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	T	.	.	C	.	G	.	.	.	C	.	.	C	.	.	A	A	.	G	G	.	.	.	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304876	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304877	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304878	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304879	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304880	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304881	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304882	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304883	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304884	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304885	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304886	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304887	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	.	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304888	T	.	.	.	.	.	C	.	.	.	C	T	T	G	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304889	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A
JX304890	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	C	.	.	.	.	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A

JX304891	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C . G . . . C C . . . . A A . G G . . T G C A . . . . . . C . . . A
KC249903	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C . G . . . C . . . . . A A . G . . . T G C A . . . . . . C . . . A
KC249904	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C . G . . . C . A . . T A A . G G . . T G C A . . . . . . C . . . A
KC249905	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C . G . . . C . A . . T A A . G G . . T G C A . . . . . . C . . . A
N. picta	
DQ108172	T . . . . . C . . . A T T . . . T . . T . . T T . . . . . G . . G . C C A . . . A . . . . . A . . C A . . . . G
DQ108173	T . . . . . C . . . A T T . . . T . . T . . T T . . . . . G . . G . C C A . . . A . . . . . A . . C A . . . . G
DQ108174	T . . . . . C . . . A T T . . . T . . T . . T T . . . . . G . . G . C C A . . . A . . . . . A . . C A . . . . G
DQ108175	T . . . . . C . . . A T T . . . T . . T . . T T . . . . . G . . G . C C A . . . A . . . . . A . . C A . . . . G
DQ108185	T . . . . . C . . . A T T . . . T . . T . . T T . . . . . G . . G . C C A . . . A . . . . . A . . C A . . . . G
N. trigonoides	
GU673434	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . T . C C . . . A
HM902465	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902466	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902467	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902478	T . . . . . C . . . C T T . G C T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902479	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902480	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902482	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902483	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902484	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
HM902485	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
JQ765533	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
JQ765534	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
JQ765535	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
JX263420	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . C C . . . A
JX304916	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . C C . . . A
JX304917	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . C C . . . A
KC250643	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . C . . . . . A A . . G G A T G C A . . . . . . C . . . A
N. vali sp. nov.	
XX000000	T . . . . . C . . . C T T . G . T G . T . . . T C . . . C . . . . . C . . . . . A A . G G G A T G C A . . . . . C C . . C G
N. varidens	
EU398733	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
EU398734	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
EU398735	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JQ681494	T . . . . . C . . . C T T . G . T . . T G . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JQ765561	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JQ765562	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JX263422	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JX304846	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
JX304868	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
KC249902	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
KC250640	T . . . . . C . . . C T T . G . T . . T . . . T C T . . C . G . . . C . . . . . A A . G G . . T G C A . . . . . . C . . . A
Arlyza et al.'s (2013) clade II	
JX304798	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G C . . . . . . C . A A . . G . . T G C A . . . . . C C . . . A
JX304799	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A . . G . . . T G C A . . . . . C C . . . A
JX304800	T . . . . . C . . . C T T . G . T G . T . . . . C . A . C G G . . . . C . A . . G . . . T G C A C . . . . C C . . . A
JX304801	T . . . . . C . . . C T T . G . T T . T . . . . C . . . C G G . . . . C . A . . G . . . T G C A C . . . . C C . . . A
JX304802	T . . . . . C . . . . T T . G . T . . T . . . . C . . . C G G . . . . C . A . . G G . . T G C A . . . . . C C . . . A
JX304803	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G C . . . . . . C . A A . . G . . T G C A . . . . . C C . . . A
JX304804	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . . C . A . . G G . . T G C A . . . . . C C . . . A
JX304805	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . . C . A . . G G . . T G C A . . . . . C C . . . A
JX304806	T . . . . . C . . . C T T . G . T G . T . . . . C T . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304807	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304808	T . . . . . C . . . C T T . G . T . . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304809	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304810	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304811	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A
JX304812	T . . . . . C . . . C T T . G . T G . T . . . . C . . . C G G . . . . C . A A . G G . . T G C A . . . . . C C . . . A

JX304813	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	G	.	T	.	.	.	.	C	.	.	.	C	G	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304814	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	G	.	T	.	.	.	.	C	.	.	.	C	G	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304815	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	G	.	T	.	.	.	.	C	.	.	.	C	G	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304828	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	G	.	T	.	.	.	.	C	.	.	.	C	G	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
Arlyza et al.'s (2013) clade III																																																														
GU673423	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
GU673425	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
GU673426	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	C	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
GU673427	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
GU673428	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304816	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304817	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304818	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304819	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304820	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304821	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304822	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	.	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304823	T	.	A	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304824	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304825	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	T	.	.	A
JX304826	T	.	.	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
JX304827	T	.	A	.	G	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	C	.	A	A	.	G	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	.	A
Arlyza et al.'s (2013) clade VII																																																														
JX304892	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304893	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304894	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304895	T	.	.	.	.	C	C	C	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304896	T	.	.	.	.	C	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304897	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	T	A	A	.	G	.	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304898	T	.	.	.	.	C	C	C	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304899	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304900	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304901	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304902	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304903	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304904	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
JX304905	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	G	G	G	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	A
Arlyza et al.'s (2013) clade VIII																																																														
JX304906	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304907	T	.	.	.	.	C	C	.	.	.	C	T	T	.	G	.	T	.	T	T	.	.	.	.	C	.	.	.	C	.	G	.	.	T	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304908	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304909	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304910	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304911	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304912	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304913	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304914	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
JX304915	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	G	.	.	C	.	.	.	C	.	G	.	.	.	.	.	.	.	.	T	A	A	.	.	.	.	.	T	G	C	A	.	.	.	.	G	C	C	.	.	.	G
Indian Ocean maskray																																																														
JX263421	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	.	A	A	.	.	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	G
KC249906	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	.	.	T	.	.	.	.	C	.	.	.	C	.	G	.	.	.	.	.	A	.	.	.	A	A	.	.	G	.	.	T	G	C	A	.	.	.	.	.	C	C	.	.	C	G
Ryukyu maskray																																																														
AB485685	T	.	.	.	.	.	C	.	.	.	C	T	T	.	G	.	T	G	.	T	.	.	.	.	C	.	.	.	C	.	.	.	.	.	.	.	.	.	.	.	A	A	.	G	G	.	A	T	G	C	A	.	.	.	.	.	.	C	.	.	.	A

Table S1. (continued)

Species, GenBank no.	321	327	331	334	336	339	340	342	348	349	354	358	363	366	367	369	372	375	378	381	384	387	390	393	397	400	402	405	408	409	412	414	420	423	426	432	433	435	438	441	444	447	450	453	456	457	459	466	468	471	474	477	478	480	483	486	489	495	498	507	510	513
N. annotata																																																														
EU398727	T	C	C	C	T	A	C	A	A	G	T	G	T	G	G	T	A	G	C	A	A	T	C	C	C	G	T	C	T	C	G	A	C	A	C	G	G	C	T	A	T	T	C	T	C	C	A	G	T	A	T	T	C	A	A	C	T	T	T	C	C	T
EU398728	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398729	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398730	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398731	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KC250622	.	.	.	.	.	.	.	.	.	.	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KC250623	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	T	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KC250628	.	.	.	.	.	.	.	.	.	.	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
N. australiae																																																														
DQ108184	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	C	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
JQ765536	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
JQ765537	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
JX304874	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	G	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
JX304875	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	G	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250626	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	G	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250627	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	C	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250632	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	G	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250635	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	C	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250642	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	C	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250645	C	A	.	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	C	T	.	.	.	.	.	.	T	A	.	T	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
N. caeruleopunctata																																																														
EU398736	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
EU398742	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
EU398743	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
EU398744	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
EU398745	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
EF609342	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
JX304860	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250629	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250630	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250634	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250637	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
KC250639	.	A	.	T	A	G	.	.	.	.	A	.	C	A	.	C	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	T	.	.	.	C	.	.	.	G	.	.	C	.	C	T	T	.
N. leylandi																																																														
EU398746	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	.	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
EU398747	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	.	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
EU398748	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	T	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
EU398749	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	.	.	.	.	.	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
EU398750	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	.	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
EU398751	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	.	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
JQ765538	A	.	.	.	A	.	.	.	.	.	G	.	C	A	.	.	G	A	T	.	.	C	T	T	.	.	.	T	.	.	.	.	.	.	T	A	.	T	.	.	.	.	T	A	T	.	.	.	A	C	C	C	.	G	.	.	.	C	C	T	T	.
N. ningalooensis																																																														
JQ765539	.	.	.	.	.	.	.	.	.	.	A	.	.	.	.	.	G	A	T	.	G	.	.	.	.	.	.	T	C	.	.	C	.	G	T	A	.	T	.	.	C	.	T	G	.	.	.	.	C	C	.	.	.	.	G	.	C	.	C	T	T	C
N. orientale																																																														
EU398737	.	A	T	T	A	G	.	.	G	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	C	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	.	.	C	T	T	.
EU398738	.	A	T	T	A	G	.	.	G	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	.	.	C	T	T	.
EU398739	.	A	T	T	A	G	.	.	.	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	.	.	C	T	T	.
EU398740	.	A	T	T	A	G	.	.	G	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	.	.	C	T	T	.
EU398741	.	A	T	T	A	G	.	.	G	.	A	.	C	A	.	.	.	A	T	.	.	.	T	.	T	.	.	T	.	.	.	.	.	.	T	A	.	.	.	.	C	C	T	.	.	.	.	.	.	C	.	.	.	G	.	.	.	.	C	T	T	.

GU673709	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JN184065	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304829	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304830	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304831	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304832	. A T T A G . . . . A . C A A . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304833	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304834	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304835	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304836	. A T T A G . . G . A A C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304837	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304838	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304839	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304840	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304841	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304842	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304843	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304844	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304845	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304847	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304848	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304849	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304850	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304851	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304852	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304853	. A T T A G . . . T A . C A . . . A T . . . T . T T . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304854	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304855	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304856	. A T T A G . . . . A . C A C . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304857	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304858	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304859	. A T T A G . . G . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304861	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304862	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304863	. A T T A G . . . . A . C A . . . A T . . . T . T . . T C . . . . . T A A . . . C C T . . . . . . C . . . G . . . . C T T .
JX304864	. A T T A G . . . . A . C A . . . A T . . . T . T . . T C . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304865	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304866	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304867	. A T T A G . . . . A . C A . . . A T . . . T . T . . T C . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304869	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304870	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304871	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304872	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304873	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . . . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .
JX304876	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304877	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304878	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304879	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304880	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304881	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304882	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304883	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304884	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304885	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304886	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304887	. A T T A G . . . . A . C A . . . A T . . . T . T . C T . . . . . . T A . . . . C C T . . . . . . C . . . . C T T .
JX304888	. A T T A G . . . . A . C A . . G A T . . . T . T . . T C A . . . . T A . . . T C C T . . . . . . C . . . G . . . . C T T .
JX304889	. A T T A G . . . . A . C A . . . A T . . . T . T . . T . A . . . . T A . . . . C C T . T . . . . C . . . G . . . . C T T .
JX304890	. A T T A G . . . . A . C A . . . A T . . . T . T . . T C A . . . . T A . . . . C C T . . . . . . C . . . G . . . . C T T .

JX304891	.ATTAG....A.CA..GAT...T.T..TCA....TA...TCCT......C...G....CTT.
KC249903	.ATTAG....A.CA...AT...T.T..T......TA....CCT......C.....T..CTT.
KC249904	.ATTAG....A.CA...AT...T.T..T......TA....CCT......C...G....CTT.
KC249905	.ATTAG....A.CA...AT...T.T..T......TA....CCT......C...G....CTT.
N. picta	
DQ108172	A...A.....G.CA..GA...CTTT..T......TA.T....TAT...ACC..G...CCTT.
DQ108173	A...A.....G.CA..GA.G.CTTT..T......TA.T....TAT...ACC..G...CCTT.
DQ108174	A...A.....G.CA..GA.G.CTTT..T......TA.T....TAT...ACC..G...CCTT.
DQ108175	A...A.....G.CA..GA...CTTT..T......TA.T....TAT...ACC..G...CCTT.
DQ108185	A...A.....G.CA..GA...CTTT..T......TA.T....TAT...ACC..G...CCTT.
N. trigonoides	
GU673434	....CG....A..A...AT...T.T..T......TA....CCT.....CC...G..C.CTT.
HM902465	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902466	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902467	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902478	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902479	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902480	....CG....G..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902482	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902483	....CG....A..A...AT...T.T..T......TA....CCT....A.C...G..C.CTT.
HM902484	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
HM902485	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
JQ765533	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
JQ765534	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
JQ765535	....CG....A..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
JX263420	....CG....A..A...AT...T.T..T......TA....CCT.....CC...G..C.CTT.
JX304916	....CG....A..A...AT...T.T..T......TA....CCT.....CC...G..C.CTT.
JX304917	....CG....A..A...AT...T.T..T......TA....CCT.....CC...G..C.CTT.
KC250643	....CG....G..A...AT...T.T..T......TA....CCT......C...G..C.CTT.
N. vali sp. nov.	
XX000000	...TAG....A.CA.C.AT...TTT..T....T.T.....CCT......C...G..C.CTT.
N. varidens	
EU398733	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
EU398734	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
EU398735	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JQ681494	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JQ765561	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JQ765562	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JX263422	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JX304846	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
JX304868	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
KC249902	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
KC250640	.ATTAG....A.CA...AT...T.T.........TA....CCT.T....C...G....C.T.
Arlyza et al.'s (2013) clade II	
JX304798	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304799	.A.TAG.G..ATCA.C.AT...T.T.........TA....CCT......C...G..C.CTT.
JX304800	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304801	.A.TAG.G..A.CA.C.AT...T.T..T......TAA...CCT......C...G..C.CTT.
JX304802	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304803	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G.TC.CTT.
JX304804	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304805	.A.TAG.G..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304806	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304807	.A.TAGTG..A.AA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304808	.A.TAGTG..A.CA.C.AT...T.T..T......TAA...CCT......C...G..C.C.T.
JX304809	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304810	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304811	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304812	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.

JX304813	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304814	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304815	.A.TAGTG..A.CA.C.AT...T.T..T......TA....CCT......C...G..C.C.T.
JX304828	.A.TAGTG..A.CA.C.AT...T.T..T......TAA...CCT......C...G..C.C.T.
Arlyza et al.'s (2013) clade III	
GU673423	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
GU673425	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
GU673426	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
GU673427	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
GU673428	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304816	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304817	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304818	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304819	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304820	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304821	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304822	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C...G..C.CTT.
JX304823	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304824	.A.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304825	.A.TAG....A.CA.C.AT...TTT.GT......TA....CCT......C..TG..C.CTT.
JX304826	CA.TAG....A.CA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
JX304827	.A.TAG....AACA.C.AT...TTT..T......TA....CCT......C..TG..C.CTT.
Arlyza et al.'s (2013) clade VII	
JX304892	.A.TAG....A.CA...AT..CT.T..T......TA....C.T......C......C.CTT.
JX304893	.A.TAG....A.CA...AT..CT.T..T......TAA...C.T......C......C.CTT.
JX304894	.A.TAG....A.CA...AT..CT.T..T......TA....C.T......C......C.CTT.
JX304895	.A.TAG....AACA...AT..CT.T..T......TA....C.T......C......C.CTT.
JX304896	.A.TAG....A.CAC..AT..CT.T..T......TA....C.T......C......C.CTT.
JX304897	.A.TAG....A.CA...AT..CT.T..T......TA....C.T......C......C.CTT.
JX304898	.A.TAG....A.CAC.GAT...T.T..T..C...TA....C.T......C......C.CTT.
JX304899	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
JX304900	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
JX304901	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
JX304902	.A.TAG....A.CA..TAT...T.T..T......TA....C.T......C......C.CTT.
JX304903	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
JX304904	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
JX304905	.A.TAG....A.CA..GAT...T.T..T......TA....C.T......C......C.CTT.
Arlyza et al.'s (2013) clade VIII	
JX304906	.A..AG....G.CA.C.AT...T.T..T......TAA...CCT......C...G..C.CTT.
JX304907	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304908	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304909	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304910	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304911	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304912	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304913	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304914	.A..AG....G.CA.C.AT...T.T..T......TA....CCT......C...G..C.CTT.
JX304915	.A..AG....G.CA.C.AT...T.T..T......TA....CCT.....CC...G..C.CTT.
Indian Ocean maskray	
JX263421	.A.TAG....A.CA.C.AT...T.T..T......TA....CCT......C......C.CTT.
KC249906	.A.TAG...AA.CA.C.AT...T.T..T......TA....CCT......C......C.CTT.
Ryukyu maskray	
AB485685	.AT.AG.G..A.CA...AT...T.T..T......T.....CCT......C...G....CTT.

Table S1. (continued)

Species, GenBank no.	Nucleotide site no.																											
	516	522	525	531	537	540	549	550	552	558	561	564	567	573	579	582	588	589	591	592	597	598	600	606	607	610	615	618	624
N. annotata																													
EU398727	A	A	A	T	A	T	C	T	A	T	A	C	T	C	C	A	T	T	A	T	C	C	A	T	T	G	T	C	T
EU398728	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398729	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398730	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EU398731	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KC250622	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	T	.
KC250623	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KC250628	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	T	.
N. australiae																													
DQ108184	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JQ765536	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JQ765537	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304874	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304875	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250626	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250627	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250632	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250635	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250642	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250645	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
N. caeruleopunctata																													
EU398736	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
EU398742	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
EU398743	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
EU398744	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
EU398745	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
EF609342	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304860	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250629	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250630	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250634	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250637	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC250639	.	.	T	C	G	.	A	.	.	C	.	T	C	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
N. leylandi																													
EU398746	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
EU398747	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
EU398748	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	.	C	.	.	.	C	C	.	C	.	.
EU398749	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
EU398750	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
EU398751	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
JQ765538	G	.	C	.	G	.	A	C	.	.	.	T	C	.	T	.	C	.	G	C	.	.	.	C	C	.	C	.	.
N. ningalooensis																													
JQ765539	.	.	C	C	.	C	A	C	.	C	.	.	.	T	T	C	C	.	.	.	T	T	.	.	C	.	.	A	C
N. orientale																													
EU398737	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398738	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398739	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398740	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398741	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.

GU673709	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JN184065	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304829	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304830	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304831	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304832	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304833	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304834	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304835	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304836	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304837	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304838	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304839	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	.	.	.	.	.
JX304840	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304841	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304842	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304843	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	.	.	.	.	.
JX304844	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304845	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304847	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304848	.	.	C	C	.	.	A	C	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304849	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304850	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304851	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304852	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304853	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304854	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304855	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304856	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304857	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304858	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304859	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304861	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304862	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304863	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304864	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304865	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304866	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304867	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304869	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304870	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304871	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304872	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304873	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304876	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304877	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304878	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304879	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304880	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304881	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304882	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304883	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304884	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304885	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304886	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304887	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304888	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304889	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304890	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.

JX304891	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC249903	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
KC249904	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
KC249905	.	.	C	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
N. picta																													
DQ108172	G	.	C	.	.	.	.	C	.	.	G	T	C	T	T	.	C	.	G	C	A	.	.	C	C	.	C	.	.
DQ108173	G	.	C	.	.	.	.	C	.	.	G	T	C	T	T	.	C	.	G	C	A	.	.	C	C	.	C	.	.
DQ108174	G	.	C	.	.	.	.	C	.	.	G	T	C	T	T	.	C	.	G	C	A	.	.	C	C	.	C	.	.
DQ108175	G	.	C	.	.	.	.	C	.	.	G	T	C	T	T	.	C	.	G	C	A	.	.	C	C	.	C	.	.
DQ108185	G	.	C	.	.	.	.	C	.	.	G	T	C	T	T	.	C	.	G	C	A	.	.	C	C	.	C	.	.
N. trigonoides																													
GU673434	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902465	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902466	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902467	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902478	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902479	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902480	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902482	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902483	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902484	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
HM902485	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JQ765533	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JQ765534	.	.	T	C	G	.	A	.	G	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JQ765535	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JX263420	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JX304916	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
JX304917	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
KC250643	.	.	T	C	G	.	A	.	.	C	.	.	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	C
N. vali sp. nov.																													
XX000000	.	G	T	C	.	.	A	.	.	C	.	.	C	T	T	G	C	C	G	C	.	.	.	C	C	.	.	.	.
N. varidens																													
EU398733	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398734	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
EU398735	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JQ681494	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JQ765561	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JQ765562	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX263422	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304846	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
JX304868	.	.	T	C	G	.	A	.	.	.	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
KC249902	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
KC250640	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	.	.	.	.	C	C	.	.	.	.
Arlyza et al.'s (2013) clade II																													
JX304798	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304799	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	G	C	C	G	C	.	.	.	C	C	A	.	.	C
JX304800	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	G	C	C	G	C	.	.	.	C	C	.	.	.	C
JX304801	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	G	C	C	G	C	.	.	.	C	C	.	.	.	C
JX304802	.	.	T	C	G	.	A	C	.	C	.	T	.	T	T	G	C	C	G	C	.	.	.	C	C	.	.	.	C
JX304803	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304804	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	G	C	C	G	C	T	.	.	C	C	.	.	.	C
JX304805	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	G	C	C	G	C	T	.	.	C	C	.	.	.	C
JX304806	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304807	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304808	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304809	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304810	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304811	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304812	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.

JX304813	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304814	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304815	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304828	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
Arlyza et al.'s (2013) clade III																													
GU673423	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
GU673425	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
GU673426	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
GU673427	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
GU673428	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304816	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304817	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304818	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304819	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304820	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304821	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304822	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304823	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304824	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304825	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304826	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304827	.	.	T	C	.	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
Arlyza et al.'s (2013) clade VII																													
JX304892	.	.	T	C	G	.	A	.	.	.	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304893	.	.	T	C	G	.	A	.	.	.	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304894	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304895	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304896	.	.	T	C	G	.	A	.	.	.	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304897	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304898	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304899	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304900	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304901	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304902	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304903	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304904	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304905	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
Arlyza et al.'s (2013) clade VIII																													
JX304906	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304907	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304908	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304909	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304910	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304911	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304912	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304913	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304914	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
JX304915	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	C	.	.	.	.
Indian Ocean maskray																													
JX263421	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	.	.	.	.	.
KC249906	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	.	C	.	.	.	.	.
Ryukyu maskray																													
AB485685	.	.	T	C	G	.	A	.	.	C	.	T	.	T	T	.	C	C	G	C	.	.	G	C	C	.	.	.	.