

A multiplex PCR approach for the molecular identification and conservation of the Critically Endangered daggernose shark

Pedro G. Nachtigall*, Luis F. S. Rodrigues-Filho, Davidson C. A. Sodr , Marcelo Vallinoto, Danillo Pinhal

*Corresponding author: pedronachtigall@gmail.com

Endangered Species Research 32: 169–175 (2017)

Supplement 1. ITS2_interspecific_alignment_clustaW

CLUSTAL O(1.2.2) multiple sequence alignment

```
Isogoxy ITS2_001      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_009      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_004      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_007      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_008      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_002      ---TTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_010      ---TTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_003      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_005      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
Isogoxy ITS2_006      --CTTAGTAATATGCTTAAATTCAGCGG-----GTTGACACGTCTGAGCTGAGGTCGT
AY198335_Carcharodon_carcharias --------GAACGCAGCTAGCTGCGAGAATTAATGTGA-ATTGC
EF194109_Cetorhinus_maximus  --------ATTAGTGTGA-ATTGC
AF515443_Isurus_paucus      --------GAATTAATGTGA-ATTGC
AF515444_Lamna_nasus      --------
AF515442_Isurus_oxyrinchus --------TTAATGTGA-ATTGC
JN008711_Rhizoprionodon_acutus --------
JN008712_Rhizoprionodon_taylori --------CGTGCGTCGATGAAGAACGCAGCTAGCTGCGAGAATTAATGTGA-ATTGC
AY033819_Carcharhinus_obscurus --------
AF513986_Carcharhinus_falciiformis --------
AY033820_Carcharhinus_plumbeus --------
AF515441_Prionace_glauca    --------
KM455551_Mustelus_punctulatus_partial --------GA-ATTGC
KM455552_Mustelus_mustelus_partial --------GA-ATTGC
AY860840_Sphyrna_zygaena   --------TTAATGTGA-ATTGC
AY858052_Sphyrna_lewini    --------TAATGTGA-ATTGC
AY860837_Sphyrna_mokarran  --------TTAATGTGA-ATTGC
JN008713_Rhizoprionodon_oligolinx --------CGTGCGTCGATGAAGAACGCAGCTAGCTGCGAGAATTAATGTGA-ATTGC
JN008714_Rhizoprionodon_lalandei TCACTCGGCTCGTGCGTCGATGAAGAACGCAGCTAGCTGCGAGAATTAATGTG--ATTGC
JN008715_Rhizoprionodon_longurio --------
JN008717_Rhizoprionodon_terraenovae --------CGTGCGTCGATGAAGAACGCAGCTAGCTGCGAGAATTAATGTGA-ATTGC
JN008719_Rhizoprionodon_porosus TCACTCGGCTCGTGCGTCGATGAAGAACGCAGCTAGCTGCGAGAATTAATGTGA-ATTGC

Isogoxy ITS2_001      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_009      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_004      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_007      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_008      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_002      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_010      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_003      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_005      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
Isogoxy ITS2_006      AAGCAAGAGGCAGCAACAACAGCTTTGTTGCTGTGTGGCCGGCCGGTCTC----CAGGCG
AY198335_Carcharodon_carcharias AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
EF194109_Cetorhinus_maximus  AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AF515443_Isurus_paucus      AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AF515444_Lamna_nasus      --------
AF515442_Isurus_oxyrinchus  AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008711_Rhizoprionodon_acutus --------
JN008712_Rhizoprionodon_taylori AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AY033819_Carcharhinus_obscurus --------
```

AF513986_Carcharhinus_falciiformis	-----
AY033820_Carcharhinus_plumbeus	-----
AF515441_Prionace_glauca	-----
KM455551_Mustelus_punctulatus_partial	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
KM455552_Mustelus_mustelus_partial	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AY860840_Sphyrna_zygaena	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AY858052_Sphyrna_lewini	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
AY860837_Sphyrna_mokarran	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008713_Rhizoprionodon_oligolinx	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008714_Rhizoprionodon_lalandei	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008715_Rhizoprionodon_longurio	-----TTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008717_Rhizoprionodon_terraenovae	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
JN008719_Rhizoprionodon_porosus	AGGACACATTGATCATCGACACTTTGAACGCACACTTTGCGGCCCGGGTTCTCCCGGGGC
Isogoxy_ITS2_001	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_009	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_004	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_007	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_008	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_002	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_010	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_003	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_005	TACGCCTTCCACAGC-----GCTGAAGG
Isogoxy_ITS2_006	TACGCCTTCCACAGC-----GCTGAAGG
AY198335_Carcharodon_carcharias	TACGCCTGTCTGAGGGTCGCTTGACGATCAATCGCACTCGCCTG-CC-----AGGCCA
EF194109_Cetorhinus_maximus	TACGCCTGTCTGAGGGTCGCTTGACCATCAATCGCACTCGCTTTGCC-----CAGCGA
AF515443_Isurus_paucus	TACGCCTGTCTGAGGGTCGCTTGACGATCAATCGCTCTCGCCTG-CC-----AGGCCA
AF515444_Lamna_nasus	-----CTCGCCTG-CC-----CGCGCA
AF515442_Isurus_oxyrinchus	TACGCCTGTCTGAGGGTCGCTTGACAATCAATCGCACTCGCCTG-CC-----AGGCCA
JN008711_Rhizoprionodon_acutus	-----CGCTTGACAATCAATCGCCCTTCGCTGGCCTTGGGGCGCGGAA
JN008712_Rhizoprionodon_taylori	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCACTTCGCTGGCCTCCGGGCGGCGTC
AY033819_Carcharhinus_obscurus	-----GTCAATCAATCGCAGTTCGCTGGCCTCCGGGCGGCGTC
AF513986_Carcharhinus_falciiformis	-----GTCAATCAATCGCAGTTCGCTGGCCTCCGGGCGGCGTC
AY033820_Carcharhinus_plumbeus	-----GTCAATCAATCGCAGTTCGCTGGCCTCCGGGCGGCGTC
AF515441_Prionace_glauca	-----GTCAATCAATCGCAGTTCGCTGGCCTCCGGGCGGCGTC
KM455551_Mustelus_punctulatus_partial	TACGCCTGTCTGAGGGTCGCTTGACAATCAATCGCACTTCGCGCGCATCCGTGCGCCGAA
KM455552_Mustelus_mustelus_partial	TACGCCTGTCTGAGGGTCGCTTGACAATCAATCGCACTTCGCGCGCATCCGTGCGCCGAA
AY860840_Sphyrna_zygaena	TACGTCTGTCTGAGGGTCGATGACAATCAATCGCACTTTGCTGTCTTCTGTGCGGCAAA
AY858052_Sphyrna_lewini	TACGTCTGTCTGAGGGTCGATGACAATCAATCGCACTTTGCTGTCTTCTGTGCGGCAAA
AY860837_Sphyrna_mokarran	TACGTCTGTCTGAGGGTCGATGACAATCAATCGCACTTTGCTGTCTTCTGTGCGGCAAA
JN008713_Rhizoprionodon_oligolinx	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCCCTTCGCTGGCCTCCGGGCGGCGAA
JN008714_Rhizoprionodon_lalandei	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCCCTTCGCTGGCCTCCGGGCGGCGAA
JN008715_Rhizoprionodon_longurio	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCCCTTCGCTGGCCTCCGGGCGGCGAA
JN008717_Rhizoprionodon_terraenovae	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCCCTTCGCTGGCCTCCGGGCGGCGAA
JN008719_Rhizoprionodon_porosus	TACGTCTGTCTGAGGGTCGCTTGACAATCAATCGCCCTTCGCTGGCCTCCGGGCGGCGAA
Isogoxy_ITS2_001	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_009	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_004	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_007	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_008	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_002	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_010	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_003	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_005	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
Isogoxy_ITS2_006	CAACACACCTACCTGCACGCAAAGTGCATGGA-----CTGGGCTGCACAGCCAC
AY198335_Carcharodon_carcharias	GAGCGCGGCTGGGGTGTGCGAGAGGGCCAGTCTCTTTGTCCCCTAAATGCAGACCCAG
EF194109_Cetorhinus_maximus	GAGCGCGGCTGGGGTGTGCGAGAGGCCCGGTCTCTCTGTCCCCTAAATGCAGACCCAG
AF515443_Isurus_paucus	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTTTGTCCCCTAAATGCAGACCCAG
AF515444_Lamna_nasus	GAGCGCGGCTGGGGTGTGCGAAAGGGCCAGTCTCTTTGTCCCCTAAATGCAGACCCAG
AF515442_Isurus_oxyrinchus	GAGCGCGGCTGGGGTGTGCGAGAGGGCCAGTCTCTTTGTCCCCTAAATGCAGACCCAG
JN008711_Rhizoprionodon_acutus	GAGCGTGGCTGGGGTGTGCGAGAGGGCTGACCTCTCTGTCCCCTAAATGCAGACCCAG
JN008712_Rhizoprionodon_taylori	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
AY033819_Carcharhinus_obscurus	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
AF513986_Carcharhinus_falciiformis	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
AY033820_Carcharhinus_plumbeus	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
AF515441_Prionace_glauca	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
KM455551_Mustelus_punctulatus_partial	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
KM455552_Mustelus_mustelus_partial	GAGCGCGGCTGGGGTGTGCGAGAGGGCCGCTCTCTCTGTCCCCTAAATGCAGACCCAG
AY860840_Sphyrna_zygaena	GAGCGCGGCTGGGGTGTGCGAGAGGGTGTCTCTCTCTGTCCCCTAAATGCAGACCCAG
AY858052_Sphyrna_lewini	GAGCGCGGCTGGGGTGTGCGAGAGGGTGTCTCTCTCTGTCCCCTAAATGCAGACTCTG

Isogoxy_ITS2_001 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_009 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_004 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_007 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_008 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_002 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_010 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_003 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_005 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 Isogoxy_ITS2_006 CGACTCTTCCAGAGAAA--CCAACGTGGCGAGGTGTGACTGCAC-----
 AY198335_Carcharodon_carcharias CGGCTGTCATCGGGTTAATTGCG---T---ATTTGACTGCTTTG-ATGCCGGGGCTG-
 EF194109_Cetorhinus_maximus CGGCTGTCATCGGGTTGCAAAATAACGA---ATGTGACTGCTTTGCTGCCGGGGCTG-
 AF515443_Isurus_paucus CGGCTGTCATCGGGTTAATTGCG---T---ATTTGACTGCTTTG-ATGCCGGGGCTG-
 AF515444_Lamna_nasus CGGCTGTCATCGGGTTAATTGCG---T---ATTTGACTGCTTTG-ATGCCGGGGCTG-
 AF515442_Isurus_oxyrinchus CGGCTGTCATCGGGTTAATTGCG---T---ATTTGACTGCTTTG-ATGCCGGGGCTG-
 JN008711_Rhizoprionodon_acutus CGGCTGTCATCGAGTTGTCGGAGCACAA----TGTGACTGC-CCCCTGCCAGGACCAT
 JN008712_Rhizoprionodon_taylori CGGCTGTCATCGGGTTGTCGGAAGAGA---ACGTGACTG-----CCGGGACCGT
 AY033819_Carcharhinus_obscurus CGGCTGTCATCGGGTTGTCGGAAGAGA---ACGTGACTG-----CCGGGACCGT
 AF513986_Carcharhinus_falciiformis CGGC-GTCATCGGGTTGTCGGAAGAGA---ACGTGACTGCCACGCTGCCGGGGACCGT
 AY033820_Carcharhinus_plumbeus CGGCTGTCATCGGGTTGTCGGAAGAGA---ACGTGACTGCCACGCTGCCGGGGACCGT
 AF515441_Prionace_glauca CGGCTGTCATCGGGTTGTCGGAACGAGA---ACGTGACTGCCACGCTGCCGGTACCGT
 KM455551_Mustelus_punctulatus_partial CGGCTGTCATCGTGTGCAAGAGAGAGAGAAACGTGACTGC-CTCGCTGTCGGGACCGT
 KM455552_Mustelus_mustelus_partial CGGCTGTCATCGTGTGCAAGT---AGAGAACGTGACTGC-CTCGCTGTCGGGACCGT
 AY860840_Sphyrna_zygaena CGGCTGTCATCAGGTTGCCAGAGAA--A----ATGTGACTGC-CACGCTGCCGGGACCGT
 AY858052_Sphyrna_lewini CGGCTGTCATCAGGTTGCCAGAGAAA----ATGTGACTGC-CACGCTGCCGGGACCGT
 AY860837_Sphyrna_mokarran CGGCTGTCATCAGGTTGCCAGAGAA--A----ATGTGACTGC-CACGCTGCCGGGACCGT
 JN008713_Rhizoprionodon_oligolinx CGGCTGTCATCAGTGTGTCGGAGCACAA---TTGTGACTG-----TCCGGACCGT
 JN008714_Rhizoprionodon_lalandei CGGCTGTCATCAGTGTGTCGGAGCAC-A----ATGTGACTG-----CCGGGACCGT
 JN008715_Rhizoprionodon_longurio CGGCTGTCATCAGTGTGTCGGAGCAC-A----ATGTGACTG-----CCGGGACCGT
 JN008717_Rhizoprionodon_terraenovae CGGCTGTCATCAGTGTGTCGGAGCAC-A----ATGTGACTG-----CCGGGACCGT
 JN008719_Rhizoprionodon_porosus CGGCTGTCATCAGTGTGTCGGAGCAC-A----ATGTGACTG-----CCGGGACCGT
 ** * * * * *

Isogoxy_ITS2_001 -----TCC-----
 Isogoxy_ITS2_009 -----TCC-----
 Isogoxy_ITS2_004 -----TCC-----
 Isogoxy_ITS2_007 -----TCC-----
 Isogoxy_ITS2_008 -----TCC-----
 Isogoxy_ITS2_002 -----TCC-----
 Isogoxy_ITS2_010 -----TCC-----
 Isogoxy_ITS2_003 -----TCC-----
 Isogoxy_ITS2_005 -----TCC-----
 Isogoxy_ITS2_006 -----TCC-----
 AY198335_Carcharodon_carcharias ---CTTGCTCCTAGAGGCTCGGGCCAGGGTTGACCCTCTGTCGGTGTGCTCG-----
 EF194109_Cetorhinus_maximus ---CTTGCTCCTCAGGCTCGGGCCAGGGTTGACCCTCTGTCGGTGTCTTGG-----
 AF515443_Isurus_paucus ---CTTGCTCCTTAGGCTCGGGCCAGGGTTGACCCTCTGTCGGTGTGCGTTG-----
 AF515444_Lamna_nasus ---CTTGCTCCTCAGGCTCGGGCCAGGGTTGACCCTCTGTTGGTGTGCTTGG-----
 AF515442_Isurus_oxyrinchus ---CTTGCTCCTCAGGCTCGGGCCAGGGTTGACCCTCTGTCGGTGTGCTTGG-----
 JN008711_Rhizoprionodon_acutus GTTGCCTTCCCTTTTGGCTTGGGCCAGGGTTCGAATCTCTGTCGACTTGTGTCG-----
 JN008712_Rhizoprionodon_taylori GTGTGCCTTCCCTTTCGGCTTGGGCCAGGGTTCGAATCTCTTGGCGATTTGTGGCGTC---
 AY033819_Carcharhinus_obscurus GTGTGCCTTCCCTTTCGGCTTGGGCCAGGGTTCGAATCTCTTGGCGATTTGTGGCATC---
 AF513986_Carcharhinus_falciiformis G--TGCCCTTCCCTTTCGGCTTGGGCCAGGGTTCGAATCTCTTGGCGATTTGTGGCATC---
 AY033820_Carcharhinus_plumbeus GTGTGCCTTCCCTTTCGGCTTGGGCCAGGGTTCGAATCTCTTGGCGATTTGTGGCATC---
 AF515441_Prionace_glauca GTGTGCCTTCCCTTTCGGCTTGGGCCAGGGTTCGAATCTCTTGGCGATTTGTGGCATC---
 KM455551_Mustelus_punctulatus_partial G--TGCCTTCCGTCGGGCCCGGGCCAGTGGTGTGACTCTCCGTCGGTGTGTGTGTGTCG
 KM455552_Mustelus_mustelus_partial G--TGCCTTCCGTTAGGCTCGGGCCCGGTGGTGTGACTCTCTGTCGATGTGTG--TGTGT
 AY860840_Sphyrna_zygaena GTGTGCCTTCCGTTAGGCTCGGGCCAGGGGGTGTGATCTCTGTCGATTTG-----
 AY858052_Sphyrna_lewini GTGTGCCTTCCGTTTGGCTTGTGCCAGG---GGTCGATCTCTGTCGATTTG-----
 AY860837_Sphyrna_mokarran GTGTGCCTTCCGTTTGGCTTGGGCCAGG---AGTCGATCTCTGTCGATTTG-----
 JN008713_Rhizoprionodon_oligolinx GTGTGCCTTCCGTTTGGCTTGGGTTCAGGGTTCGAATCTCTTGGCGATTT--GTG-----
 JN008714_Rhizoprionodon_lalandei GTGTGCCTTCCGTTTGGCTTGGGTTCAGGGTTCGAATCTCTTGGCGATTT--GTG-----
 JN008715_Rhizoprionodon_longurio GTGTGCCTTCCGTTTGGCTTGGGTTCAGGGTTCGAATCTCTTGGCGATTT--GTG-----
 JN008717_Rhizoprionodon_terraenovae GTGTGCCTTCCGTTTGGCTTGGGTTCAGGGTTCGAATCTCTTGGCGATTT--GTG-----
 JN008719_Rhizoprionodon_porosus GTGTGCCTTCCGTTTGGCTTGGGTTCAGGGTTCGAATCTCTTGGCGATTT--GTG-----

Isogoxy_ITS2_001 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_009 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_004 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_007 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_008 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_002 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG
 Isogoxy_ITS2_010 -----CACGGTCACGAAAGCAGCGGCTGGCGGC-----TCCAGCGCAAAGGCG

Isogoxy_ITS2_003	-----CACGGTCACGGAAAGCAGCGGCTGGCGGC-----TCGCAGCGCAAAGGCG
Isogoxy_ITS2_005	-----CACGGTCACGGAAAGCAGCGGCTGGCGGC-----TCGCAGCGCAAAGGCG
Isogoxy_ITS2_006	-----CACGGTCACGGAAAGCAGCGGCTGGCGGC-----TCGCAGCGCAAAGGCG
AY198335_Carcharodon_carcharias	-----GAAAGATGCAGCACAGTTG---GGCATTGAG-TGCATCGGCC
EF194109_Cetorhinus_maximus	-----GAAAGATGCAGCACAGTTG---GGCATTGAG-TGCATCGGCC
AF515443_Isurus_paucus	-----GAAAGATGCAGCACAGTTG---GGCATTGAG-TGCATCGGCC
AF515444_Lamna_nasus	-----GAAAGATGCAGCACAGTTG---GCACATTGGG-TGCATCGGCC
AF515442_Isurus_oxyrinchus	-----GAAAGATGCAGCACAGTTG---GCACATTGGG-TGCATCGGCC
JN008711_Rhizoprionodon_acutus	-----CTCGTACAGTGAAGGATTCGCAGAGTTG---GCCCGTTGGG-TGCACTGGTG
JN008712_Rhizoprionodon_taylori	-----CTCCACAGGAAGGATCCGCAGTGTG---GAACGGTTCGGGTGCTCCGGCA
AY033819_Carcharhinus_obscurus	-----CTCCACAGGAAGGATCCGCAGTGTG---GAACGGTTCGGGTGCTCCGGCA
AF513986_Carcharhinus_falciiformis	-----CTCCACAGGAAGGATCCGCAGTGTG---GAACGGTTCGGGTGCTCCGGCA
AY033820_Carcharhinus_plumbeus	-----CTCCACAGGAAGGATCCGCAGTGTG---GAACGGTTCGGGTGCTCCGGCA
AF515441_Prionace_glauca	-----CTCCACAGGAAGGATCCGCAGTGTG---GAACGGTTCGGGTGCTCCGGCA
KM455551_Mustelus_punctulatus_partial	GCGTGGCTCGTCCACGGGAAGGATCCGCAGAGTTG---GCTCGGTTGGG-TGCTCCGGCA
KM455552_Mustelus_mustelus_partial	GCGTGGCTCGTCCACGGGAAGGATCCGCAGAGTTG---GCTCGGTTGGG-TGCTCCGGCA
AY860840_Sphyrna_zygaena	--TGGCTCCTCCACGTAAGGATCCGCTTTGTTG---GCCTGGTTGGT-TCT---TGCA
AY858052_Sphyrna_lewini	--TGGCTCCTCCAGGTAAGGATCCGCTTTGTTG---GACTGGTTGGT-TCT---GGCA
AY860837_Sphyrna_mokarran	--TGGCTCCTCCACGTAAGGATCCGCTTTGTTG---GCCGGTTGGT-CCT---TGCA
JN008713_Rhizoprionodon_oligolinx	--CTGCTCGTTACAGTGAAGGATCCGCAGTGTG---GCCCGTTCGGG-TGCACTGGTG
JN008714_Rhizoprionodon_lalandei	--CTGCTCT-TACAGTGAAGGATCCGCAGTGTG---GCCCGTTCGGG-TGCACTGGTG
JN008715_Rhizoprionodon_longurio	--CTGCTCT-TACAGTGAAGGATCCGCAGTGTG---GCCCGTTCGGG-TGCACTGGTG
JN008717_Rhizoprionodon_terraenovae	--CTGCTCT-TACAGTGAAGGATCCGCAGTGTG---GCCCGTTCGGG-TGCACTGGTG
JN008719_Rhizoprionodon_porosus	--CTGCTCT-TACAGTGAAGGATCCGCAGTGTG---GCCCGTTCGGG-TGCACTGGTG
	* * * *
Isogoxy_ITS2_001	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_009	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_004	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_007	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_008	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_002	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_010	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_003	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_005	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
Isogoxy_ITS2_006	TTACA-ACAGAGTGAGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACT
AY198335_Carcharodon_carcharias	GAATGTGGAGAGAGAGAGAGAGAGAGACACACAGAGAGGCACACAGAGAGAGGTT
EF194109_Cetorhinus_maximus	GAAAGAGAAGTGAG----AGAGAGAGAGAGAGAGAGAG-----
AF515443_Isurus_paucus	GAAAGAGAAGCGAG----AGAG----AGAGAGAGAGAGAGAGAGGCACACAGAGAGAGGT
AF515444_Lamna_nasus	GAAAGAGAAGCGAG----AGAGAGAGAGAGAGAGCAAGAGAGGGGCACACAGAGGGAGGT
AF515442_Isurus_oxyrinchus	GAAAGTGAAGAGAG----AGAGAGAGAGAGAC--ACACAGAGAGAGGCACACAGAGAGGTT
JN008711_Rhizoprionodon_acutus	GTGCTGGGAGAGAGAA--A-----GAGTTTTGGAGAGGCTCTCCGAGGAGTT
JN008712_Rhizoprionodon_taylori	CTTCA-AGAGTGTGCG--TGTGTCTGAGAAAGAGAGCTGGAGCGACTCCCGCTGGTCT
AY033819_Carcharhinus_obscurus	CTAAA-GAGTGTG-----TGAGAAAGAAGAAGTGGAGCGACTGTCTGCTGGTGGT
AF513986_Carcharhinus_falciiformis	CGAAA-GAGTGTG-----TGAGAAAGA-GAAGTGGAGCGACTGTCTGCAGGTCTGT
AY033820_Carcharhinus_plumbeus	CTAAA-GAGTGTG-----TGAGAAAGA-GAAGTGGAGCGACTGTCTGCAGGTCTGT
AF515441_Prionace_glauca	CTAAA-GAGTGTG-----TGAGAAAGA-GAAGTGGAGCGACTGTCT-----
KM455551_Mustelus_punctulatus_partial	CCGAG-AGTTG-----A-GAGAGAGCGCGAGTACTGTCCGCTGGTCTGT
KM455552_Mustelus_mustelus_partial	CCGAG-AGTG-----AGAGAGTGGAGTACTGTCCGCTGGACGT
AY860840_Sphyrna_zygaena	CTGGC-ACTGAGTGAG-----AGACTCGTATGTCTGGCCTCCGCCAGGTTG
AY858052_Sphyrna_lewini	CTGAG-TGAGAG-----AGCAGAG-GGTC-----TGGCCCTCCGCAAGTTG
AY860837_Sphyrna_mokarran	CTGGC-ACTGAGTGAG--AGAGCAGAG-TGACTCGCTGTCTGTGGCCTTCT-CGGAAGTT
JN008713_Rhizoprionodon_oligolinx	CTGAG-GCACAGAGAG--AGAGAAAG-----AAAGTGGAGTACTGTCCGCT-GGTGG
JN008714_Rhizoprionodon_lalandei	CTGAG-GCACAGAGAG--AGAGAAAG-----AAAGTGGAGTACTGTCCGCTGGTGGG
JN008715_Rhizoprionodon_longurio	CTGAG-GCACAGAGAG--AGAGAAAG-----AAAGTGGAGTACTGTCCGCTGGTGGG
JN008717_Rhizoprionodon_terraenovae	CTGAG-GCACAGAGAG--AGAGAAAG-----AAAGTGGAGTACTGTCCGCTGGTGGG
JN008719_Rhizoprionodon_porosus	CTGAG-GCACAGAGAG--AGAGAAAG-----AAAGTGGAGTACTGTCCGCTGGTGGG
Isogoxy_ITS2_001	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_009	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_004	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_007	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_008	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_002	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_010	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_003	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_005	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
Isogoxy_ITS2_006	GAGC-----CAGGAGGC-AGCGGTACTCGCCAAGGTTTGCAAAACGGTGGGAAGGCACA
AY198335_Carcharodon_carcharias	TTGTGGTGTCTTCCATTGTTGTGGTTCGAGCGATCGGTGCC-TGTAGCGCTGGTAGACCC
EF194109_Cetorhinus_maximus	-----
AF515443_Isurus_paucus	TTGTGGTGTCTTCCATTGTTGTGGTTCGAGCGATCGGTGCC-TGTAGCGCTGGTAGACCC
AF515444_Lamna_nasus	TTGTGGTGTCTTCCATTGTTGTGGTTCGAGCGATCGGTGCC-TGTAGCGCTGGTAGACCC

AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca

TTGTGGTGCTTCCATTGTTGTGGTTCGAGAGATAGGTGCC-TGTAGTCTGGTAGACAC
CCTC-AGACTTTGCCTTGTCTGCTGTG-TGCAGCTTTTGCC-TGGTTCTGGTTGGATGGC
CCTC-TGACTTTGCCTGGTTGCGGTTCT-GTGCTGGTTTGCC-TGAAGGTGGTTGGCCCC
CCTC-TGACTTTGGCTGGTTGCGGTTCT-GTGCTGGTTTGC-CTAAAGGTGGTTGGCCCC
CCTC-TGACTTTGCCTGGTTGCGGTTCT-CGCGCTGGTTGTC-CTGAAGGTGGTTGGCCCC
CCTC-TGACTTTGGCTGGTTGCGG-TG-TGTGCTGGTTTGC-CTGAAGGTGGTTGGCCCC
-----TGCCTGGTTGCGG-TG-TGTGCTGGTTTGA-CTGAAGGTGGTTGGCCCC
CTCC-GGACGCTGCGCTTGCCTGCGGTG-GCCCGTGTCTGCT-TGCCTGCCGCGGGGTTG
CTCC-GGACACGCTGCGCTGCGCGTTG-GTCCGTGCTCGGT-CGCCCCGGGTGG-GTCG
GCCTTTCCCTCATTCTGTTAACACCTT-TGCATTGCATTG-ACCCGCCAGCACTGGTTT
GCCTTTCCCCTCGTTCTGTAACACCTT-TGCGTTGCATTG-ACCCGCCAGCACTGGTTT
GGCCTTTCCCTCATTCTGTAACACCTT-TGCACTGCATTG-ACCCGCCAGCACTGGTTT
TCCTCAGACTTTGCATGG--TCTGGTA-TGTGCTGGGTTTCG-CCTGGTGCGGTGGTTTGT
TGCTCAGACTTTGCATGG--TCCGGTA-TGTGCTGGGTTTTCG-CCTGGTGCGGTGGTTTGT
TCCTCAGACTTTGCATGG--TCCGGTA-TGTGCTGGGTTTCG-CCTGGTGCGGTGGTTTGT
TCCTCAGACTTTGCATGG--TCCGGTA-TGTGCTGGGTTTCG-CCTGGTGCGGTGGTTTGT
TCCTCAGACTTTGCATGG--TCCGGTA-TGTGCTGGGTTTCG-CCTGGTGCGGTGGTTTGT

ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
ATTGACCGGGACAGCACCTTACACGCAGAGGACTTGACAGCAGCAAGTCAC-----
GGCTTTCATGTGCGGGGCTGTACCGTAGGTGGTGGAGAGCTTGACGCAGTG-AC--TG

GGCTTTCAGTGCAGG-GCTGTTCCGTAGATGGTGGAGGGAGCTTGACGCAGTG-AC--TG
GGCTTTCAGTGCAGG-GCTGTACCGTAGGTGGTGGAGGGAGCTTGACGCAGTG-AC--TG
AGCTTTCAGTGCAGG-GCTGTACCGTATGTTGGTGGTGGAGCTTGACGCAGTG-AC--TG
CGCTGGCTGTTTCACTGCGCTCATGTTGGAGGTGCG---GCAGCTTGACACGTCTGTGTGTG
CTGGCTGTGTTTCACTGCGCTGCTGGTGGAGGACGT---GCAGCTTGACGCGTGTGTG----
CTGGCTGTGTTTCACTGCGCTGCTGGTGGAGGACGT---GCAGCTTGACGCGTGTGTG----
CTGGCTGTGTTTCACTGCGCTGCTGGTGGAGGACGT---GCAGCTTGACGCGTGTGTG----
CCGTGGCCGTTTCAGTGCCTGCTGCTGGAGGACG-GGGCAGCTTGACGCGTGT-----G
CCGTGGCCGTTTCAGTGCCTGCTGCTGGAGGACG---GAGGA-CGGCAGCTTGACGCGTGT-----G
CCCTTACTGTGGAAG-----TGACG--CA----CACTTCACCAC-----
CCGTTACTGTGGAAG-----TGACG--CA----CACTTCACCAC-----
CCGTTACTGTGGAAG-----TGACG--CA----CACTTCACCAC-----
CCCTGACCGGTTCAGCGCGTGCCTGGAGGACG---CAGCTGCACACGCGT--GTGTG
CCCTGGCCGTTTCAGCGCGTGCCTGGAGTACG---CAGCTGCACACGCTGTGTGTGTG
CCCTGGCCGTTTCAGCGCGTGCCTGGAGTACG---CAGCTGCACACGCTGTGTGTGTG
CCCTGGCCGTTTCAGCGCGTGCCTGGAGTACG---CAGCTGCACACGCTGTGTGTGTG
CCCTGGCCGTTTCAGCGCGTGCCTGGAGTACG---CAGCTGCACACGCTGTGTGTGTG

GGGCAC--AGACGTCCGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGACGTCCGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGACGTCCGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGACGTCCGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGACGTCCGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCAC--AGAGGTCAGAGCAAGGACCGC--AACGGCCGAGTCGGCTGCAACAGTTCACA
GGGCTGTCTC---GCTTGCCTGTGTTGCTGGCCA-----G-G----GGTGTGTTGGCT
GGGCTGTCTC---GCTTGCCTGTGTTGCTGGCC-----GTG----GGTGTGTTGGCT
-----GTCTC---GCTTGCCTGTGTTGCTGGCC-----GGG----CGTGTGTTGCCT
CGTGTGCAAAGCTTCATTGCTGGATCCGTGGTGGAGCGGTTG----TGCTTTTCATT
AGGCTTC-ATG-----CCTGGATCCGTGCTTGTCCGGTC-----GTGCTTTTCATT
GAGGCGG-CAG-----CCAGGATCCGTGCTGTAGACCGGTG----GTGCTTTTCATT
AGGCTTC-AAG-----CCTGGATCCGTGCTTGTCCGGTT----GTGCTTTTCATT
AGGCTTC-ATG-----CCTGGATCCGTGCTTGTCCGGTT----GTGCTTTTCATT
AGGCTTC-ATG-----CCTGGATCCGTGCTTGTCCGGTT----GTGCTTTTCATT

KM455551_Mustelus_punctulatus_partial	ACGCCCCGACG-----CCTGGATCGGTGCTCGGTGCTGCGGC--GCTTTTCTTCCCT
KM455552_Mustelus_mustelus_partial	ACGCTCGACG-----CCTGGATCGGTGCTCGGTGCTGCGGT--GCTTTTCTTCCCT
AY860840_Sphyrna_zygaena	--GCTGGGTTAT-----CTGGAAGAGTTGATGTGCCGAGCCCGGTCCGTGTGCTGAGT
AY858052_Sphyrna_lewini	--GCTGGGTTAC-----CTGGAAGAGTTGATGTGCCGAGCCCGGTCCGTGTGCTGAGT
AY860837_Sphyrna_mokarran	--GCTGGGTTAT-----CTGGAAGAGTTGATGTGCCGAGCCCGGTCCGTGTGCTGAGT
JN008713_Rhizoprionodon_oligolinx	AGGCTTCATTGC-----CTGGAACAAT-GCTCTGCCGCGTTGC--TTCTTTTCTCATT
JN008714_Rhizoprionodon_lalandei	AGGCTTCATTGC-----CTGGAACAAC-GCTCTGCCGCGTTGC--CCT-TTTCTCATT
JN008715_Rhizoprionodon_longurio	AGGCTTCATTGC-----CTGGAACAAC-GCTCTGCCGCGTTGC--CCT-TTTCTCATT
JN008717_Rhizoprionodon_terraenovae	AGGCTTCATTGC-----CTGGAACAAC-GCTCTGCCGCGTTGC--CCT-TTTCTCATT
JN008719_Rhizoprionodon_porosus	AGGCTTCATTGC-----CTGGAACAAC-GCTCTGCCGCGTTGC--CCT-TTTCTCATT
Isogoxy ITS2_001	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_009	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_004	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_007	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_008	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_002	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_010	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_003	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_005	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
Isogoxy ITS2_006	AACCCCCGCGTTTCAGTCGAGCT-----GAACGCAGGTGCA-----GGCAGGCAC--A
AY198335_Carcharodon_carcharias	TCGGCGGTTTTGGCATGT-----T-----GTTCTGTGAG---
EF194109_Cetorhinus_maximus	-----T-----GTTCTGTGAG---
AF515443_Isurus_paucus	TCGGTGGTTTTGGCATGT-----T-----GTTCTGTGAG---
AF515444_Lamna_nasus	TCGGCGGTTTTGGCATGC-----T-----GTTCTGTGAG---
AF515442_Isurus_oxyrinchus	TTGGTGGTTTTGGCATGT-----T-----GTTCTGTGAG---
JN008711_Rhizoprionodon_acutus	TCCTGAGTAAGTCCAGT---T----GCCCGTGGGTGCT-----GGTGGTGTC---
JN008712_Rhizoprionodon_taylori	CCCCGGGTRCTCTGAGAT-----GCCCGTGGGTG-----CTTGCA--GTGTGCG
AY033819_Carcharhinus_obscurus	CCCCGGGTGCTCTGAGTG-----CCCGT-GGGTG-----CTTGCAAGTGTCTCG
AF513986_Carcharhinus_falciiformis	CCCCGGGTGCTCTGAGTG-----CCCGT-GGGTG-----CTTGCAAGTGT--CG
AY033820_Carcharhinus_plumbeus	CCCCGGGTGCTCTGAGTG-----CCCGT-GGGTG-----CTTGCAAGTGT--CG
AF515441_Prionace_glauca	CCCCGGGTGCTCTAAGTG-----CCCGT-GGGTG-----CTTGCAAGTGTCTCG
KM455551_Mustelus_punctulatus_partial	CGGTGCGCGGTGTGAGCG-----CCTGCATTTTT---
KM455552_Mustelus_mustelus_partial	CGGTGCGCGGTGTGAGCG-----CCTGCATTTTT---
AY860840_Sphyrna_zygaena	GCTGTGAGGGACAGTGCCTTGTACGTT----CTGTGTGT-GTCAGTGCCTGTGCATCC
AY858052_Sphyrna_lewini	GCTGTGAGGGACACACGGCAGTGCCTTGTACGTTCTGTGTGTGTCAGTGCCTGTGCATCC
AY860837_Sphyrna_mokarran	GCTGTGAGGGACACATGGCAGTGCCTTGTACGTTCTGTGTGTGTCAGTGCCTGTGCATCC
JN008713_Rhizoprionodon_oligolinx	CTACCGGAGAGCTCGGA---A----AACGTTGGGTGCTTGCAAGGGTGCCTTGAT---
JN008714_Rhizoprionodon_lalandei	CTACCGGAGAGCTCGGA---A----AGCGTG-GGTGCTTGCAAGGGTGCCTTGAT---
JN008715_Rhizoprionodon_longurio	CTACCGGAGAGCTCGGA---A----AACGTTGGGTGCTTGCAAGGGTGCCTTGAT---
JN008717_Rhizoprionodon_terraenovae	CTACCGGAGAGCTCGGA---A----AACGTTGGGTGCTTGCAAGGGTGCCTTGAT---
JN008719_Rhizoprionodon_porosus	CTACCGGAGAGCTCGGA---A----AACGTTGGGTGCTTGCAAGGGTGCCTTGAT---
Isogoxy ITS2_001	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_009	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_004	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_007	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_008	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_002	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_010	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_003	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_005	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
Isogoxy ITS2_006	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
AY198335_Carcharodon_carcharias	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
EF194109_Cetorhinus_maximus	CGGCTCGGGAACAC--GAGCGTG-----GGGCTGCGGAGTGTGCAAGGGAGACCAG
AF515443_Isurus_paucus	TGTCCACAGGG---GTGGTAGTCGGCTCGCGCCGCTGATTCTGTGTTGACTGGAGTTTCAT
AF515444_Lamna_nasus	TG-CCTCTGGG---CTGGTAGTCGGCTCGCGCCGCTGTTCTGTGTTGCACTGGAGTTTCAT
AF515442_Isurus_oxyrinchus	TG-CCTCTGGG---GTGGTAGTCGGCTCGCGCCGCTGATTCTGTGTTGCACTGGAGTTTCAT
JN008711_Rhizoprionodon_acutus	-AGTCAAGGACTCCGTGTGGCGGTGTTAGGGAGTTGCTGTTGTAGCCTGGAGCCCGG
JN008712_Rhizoprionodon_taylori	CCTCTCAGGAA---TCCGTGGCGGTTAGGGAGAGTTGCTTGTGTTGTGCTGGAGCCTGG
AY033819_Carcharhinus_obscurus	CCTCTGAGGAA---TCCGTGGCGGTTAGGGAAAGTTGCTTGTGTTGCTGGAGCCTGG
AF513986_Carcharhinus_falciiformis	CCTCTGAGGAA---TCCGTGGCGGTTAGGGAAAGTTGCTTGTGTTGCTGGAGCCTGG
AY033820_Carcharhinus_plumbeus	CCTCTGAGGAA---TCCGTGGCGGTTAGGGAAAGTTGCTTGTGTTGCTGGAGCCTGG
AF515441_Prionace_glauca	CCTCTTAGGAC---TCCGTGGCGGTTAGGGACGTTGC-TTGTGTTGCTGGAGCCTGG
KM455551_Mustelus_punctulatus_partial	-GTCGCGGGAA---TCCGTGGCGGTACGGTGCCTGCTTGTGTTGCTGGAGCCTGG
KM455552_Mustelus_mustelus_partial	-GTCGCGGGAA---TCCGTGGCGGTTGGTGTGCTTGTGTTGCTGGAGCCTGG
AY860840_Sphyrna_zygaena	TCTGCGCAGCA-CGCCATGCATTGCGTGCAGCTACGTGTGCCTGCAGCCCTCGAAGGTGC
AY858052_Sphyrna_lewini	TCTGCGCAGCACGCCACGCATTGCGTGCAGCTACGTGTGCCTGCAGCCCTCGAATGTGC
AY860837_Sphyrna_mokarran	TCTGTGCAGCA-CGCCATGCATTGCGTGCAGCTACGTGTGCCTGCAGCCCTCGAATGTGC
JN008713_Rhizoprionodon_oligolinx	-----GAA---C-CTTGGTGGATAAAGGGAGTTGCTGGTGTGCGATGGATCGCG-
JN008714_Rhizoprionodon_lalandei	-----GAA---C-CTTGGTGGATCAAGGGAGTTGCTGGTGTGCGCTGGAGCCGC-

JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

-----GAA----CCTTGGGTGGATCAAGGGAGTTGCTGGTGTTCGCTGGAGCCGC-
-----GAA----CCTTGGGTGGATCAAGGGAGTTGCTGGTGTTCGCTGGAGCCCTC-
-----GAA----CCTTGGGTGGATCAAGGGAGTTGCTGGTGTTCGCTGGAGCCGC-

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
GCTCCAGCGCAAC---ACAAGCAACTT-----CCTAA-CCGCCACGGATTCTCAGAGGC
TCTCCGTGCTGACGTCGCTGGCGCC-AGCCTTCCGCTTCCCTGCGGTTTACGTGCACTT

TCTCCTCCACACGTTGTCAGCGCC-AGCCTC-CCACTTCTCGGGTTACGTCCACCT
TCTCCTCCACACGTCGTCGGCGCC-AGCCTTCTAACTTCTCGGGTTACGTCCAGCC
TCTCCGTGACACGTCCTCGGCTCC-AGCCTC-CCAGTCTCGGTGTTACGTCCAGCT
GCTCCTCTGCACTCTGCAAGCCCTCTCTACTCCACTTTGTGTTTCTGGTGTAT
TCTCCTGCCACACTCCGAGCCACCCTCTCTACTCCACTTTGTGTTTCTGGGCGGT
TCTCCTTCCACTCCGCA-GCCCCACC--CTCTCTGCCCTTGTGTTTCCCGTCCGCT
TCTCCTTCCACTCCGA-GGCCACC--CTTCTGCCCCCTGTGTTTCCCGGGGGT
TCTCCTTCCACTCTGCA-GC-CCCTCC--CTCTCTGCCCTTGTGTTTCCCGGGCGGT
GCTCCTTCCACTCCGAG--CCC-----ACCCCTGCCGTTGCGGTTCCCTCGCAAT
GCTCCTTCCACTCCGAG--CCC-----ACCTCTGCCGTCGCGGTTCCGTGCAAT
CTGAGACCGGCCGCCACACAGCAC-----CCGCGATGTGCTCCTTGTACGACCT
CTGAGACCGGCCGCCACACAGCAC-----CCGCTTGTGCTCCTTGTACGACCT
CTGAGACCGGCCGCCACACAGCAC-----CCGCTTGTGCTCCTTGTACGACCT
---GCCCCCTGACACGCTG-----GCTCTCCGCCCTCGTTTGTGAGGAGCT
---GGCTCCTTGTAAACACCCTCGCT-----CTCTCCGCCCTTGTGTTTGTGAGGAGCT
---GGCTCCTTGTAAACACCCTCGCT-----CTCTCCGCCCTTGTGTTTGTGAGGAGCT
---GGCTCCTTGTAAACACCCTCGCT-----CTCTCCGCCCTTGTGTTTGTGAGGAGCT

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GACTGCAAGCACCCAG-----GGAATG-----AAACGCACAACCAG
GTGCCCTGACTGTCT-TGCGAGCACTGCCTTAGTCAGT-----CGCCTGGCACGCAG

GTGCCCTAACTGTCC-TGCGAGCACTGCCTTGGTGTAGT-----CGCCTGGCACGAAG
GTGCCCTAACTGTCT-TGCGAGCACTACCCTAGTCAGT-----CGCCTGGCACGCAG
GTGCCCTAACTGTCT-TGCGAGCACTGCCTTAGTCAGT-----CGCCTGGCACGTAG
GTGCCCTGCGCGCC-TGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GTGCCCTGCGTGCACC-TGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GTGCCCTGCGTGCCTTTGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GGGCTGCGTGCACC-TGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GCGCTGCGTGCACC-TGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GTGCCCTGCGTGCACC-TGCGTTTCAAGTGGGTCGAACAGGGTCTGAACTGTTGCAAG
GTGCCCTGCGCGCGCTT-----CAGCGCGTGC--CTGGGTTTGAATCGTCGAGC--
GTGCCCTGCGCGCGCTT-----CAACGTGTGCTTGGGTTTGAATCGTCGAGCCG
CAGCTCAGACGTGTCAAC----C-----
CAGCTCAGACGTGTCAAC----C-----
CAGCTCAGACGTGTCAAC----C-----
CTGCCTGAACCTGCGTTG---ATCTGAGCTTGACCGGGTTTCTGAATTGGAGCAGCCG
CTGCCTGAACCTGCGTTG---ATCTGAGCTTGACCGGGTTTCTGAATTGGAGCAGCCG
CTGCCTGAACCTGCGTTG---ATCTGAGCTTGACCGGGTTTCTGAATTGGAGCAGCCG
CTGCCTGAACCTGCGTTG---ATCTGAGCTTGACCGGGTTTCTGAATTGGAGCAGCCG
CTGCCTGAACCTGCGTTG---ATCTGAGCTTGACCGGGTTTCTGAATTGGAGCAGCCG

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004

ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACAGTCAAGCTGCCCGTCTCC
ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACAGTCAAGCTGCCCGTCTCC
ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACAGTCAAGCTGCCCGTCTCC

Isogoxy ITS2_007
 Isogoxy ITS2_008
 Isogoxy ITS2_002
 Isogoxy ITS2_010
 Isogoxy ITS2_003
 Isogoxy ITS2_005
 Isogoxy ITS2_006
 AY198335_Carcharodon_carcharias
 EF194109_Cetorhinus_maximus
 AF515443_Isurus_paucus
 AF515444_Lamna_nasus
 AF515442_Isurus_oxyrinchus
 JN008711_Rhizoprionodon_acutus
 JN008712_Rhizoprionodon_taylori
 AY033819_Carcharhinus_obscurus
 AF513986_Carcharhinus_falciiformis
 AY033820_Carcharhinus_plumbeus
 AF515441_Prionace_glauca
 KM455551_Mustelus_punctulatus_partial
 KM455552_Mustelus_mustelus_partial
 AY860840_Sphyrna_zygaena
 AY858052_Sphyrna_lewini
 AY860837_Sphyrna_mokarran
 JN008713_Rhizoprionodon_oligolinx
 JN008714_Rhizoprionodon_lalandei
 JN008715_Rhizoprionodon_longurio
 JN008717_Rhizoprionodon_terraenovae
 JN008719_Rhizoprionodon_porosus

 Isogoxy ITS2_001
 Isogoxy ITS2_009
 Isogoxy ITS2_004
 Isogoxy ITS2_007
 Isogoxy ITS2_008
 Isogoxy ITS2_002
 Isogoxy ITS2_010
 Isogoxy ITS2_003
 Isogoxy ITS2_005
 Isogoxy ITS2_006
 AY198335_Carcharodon_carcharias
 EF194109_Cetorhinus_maximus
 AF515443_Isurus_paucus
 AF515444_Lamna_nasus
 AF515442_Isurus_oxyrinchus
 JN008711_Rhizoprionodon_acutus
 JN008712_Rhizoprionodon_taylori
 AY033819_Carcharhinus_obscurus
 AF513986_Carcharhinus_falciiformis
 AY033820_Carcharhinus_plumbeus
 AF515441_Prionace_glauca
 KM455551_Mustelus_punctulatus_partial
 KM455552_Mustelus_mustelus_partial
 AY860840_Sphyrna_zygaena
 AY858052_Sphyrna_lewini
 AY860837_Sphyrna_mokarran
 JN008713_Rhizoprionodon_oligolinx
 JN008714_Rhizoprionodon_lalandei
 JN008715_Rhizoprionodon_longurio
 JN008717_Rhizoprionodon_terraenovae
 JN008719_Rhizoprionodon_porosus

 Isogoxy ITS2_001
 Isogoxy ITS2_009
 Isogoxy ITS2_004
 Isogoxy ITS2_007
 Isogoxy ITS2_008
 Isogoxy ITS2_002
 Isogoxy ITS2_010
 Isogoxy ITS2_003
 Isogoxy ITS2_005
 Isogoxy ITS2_006

ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 ACAAGAGCACGCGGATCCAGGCAACGAAGCCTCGCACACACGTCAAGCTGCCCGTCCTCC
 TCTCGGCCCTCTGCGGCTGCACTCCACACGAC--ACCC---GACCCGGGTGCGGTTG-

 TCTAGGCCCTCTGCGGCTGCACTCCTCAACGA--CACC---CAACG-----CGTTGCG-
 TCTCGGCCCTCTGCGGCTGCACTCCTCACGAC--ACCC---GACCCGGGTGCGGTTG-
 TCTCGGCCCTCTGCGGCTGCACTCCTCACGAC--ACCC---GACCCGGGTGCGGTTG-
 T-----CGTGTGGTCTTGTCTGTCTGTCTTTGCCCG---CCCCTGCGGGTCTCTGC
 GCTGGCCGTTGCGGCTCTGCTGTGACGTCTCTGACGT---GAACCTGCTGTGTCA-
 ACTCGGCCGTTGCGGCTCTTGTCTGACGTCTCTGCCCGT---GG-CCTGCTGCGGTCA-
 ACTCGGCCGTTGCGGCTCTTGTCTGACGTCTCTGCCCGT---GG-CCTGCTGCGGTCA-
 GACTCGGCCGTTGCGGCTCTTGTCTGACGTCTCTGCCCGT---GA-CCTGCTGTGCCA-
 GACTCGGCCGTTGCGGCTCTTGTCTGACGTCTCTGCCCGT---GA-CCTGCTGTGTCA-
 ---C-GTGTGTGGTCTCTGCTCCGGTGTGCTCCCGTGG---CCTGCTGCCCAAAG-
 ACTT-GGCCGTGCGGCTCTGCTCCGACGTGTCCCGTGG---CCTGCTGCCCAAAG-
 -----C-----
 -----C-----
 -----C-----
 ACTT-GGAGTGTGGTCTTGTGACTGTTGTCTTCCGCCGT-----GTGCTGTGCTG-
 ACTC-GGAGTGTGGTCTTGTGACTGACGTCTTCCGCCG-----GTGCTGTGCTT-
 ACTC-GGAGTGTGGTCTTGTGACTGACGTCTTCCGCCG-----GTGCTGTGCTT-
 ACAC-GGAGTGTGGTCTTGTGACTGACGTCTTCCGCCG-----GTGCTGTGCTT-
 ACTC-GGAGTGTGGTCTTGTGACTGACGTCTTCCGCCG-----GTGCTGTGCTT-

 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGACAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGACAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 ACCAGACGGCAATGAACACAGCCAGGAGGGGGCCGACCACCTTCAGGCAAACCAGCAGAG
 -----CTGCCTTGAC--CAAGCTGTGCTGCCTTCTG--CCGC--TTGCACACGCTCGTTC

 -----CTGCCCTGCAC--CGAGCTGGGTGCCTGCTG--CCGC--TTGCACATGCCCGTTC
 -----CTGCCTTGAC--CAAGCTGTGCTGCCTCTG--CCGC--TGACACGCCCGTTC
 -----CTGCCTTGAC--CAAGCTGTGCTGCCTTCTG--CCGCATAGCACACGCCCGTTC
 TGCTCGCAGCCCTTGCATGT--CCGGTGTGTTCTG--CCCTGTGCCTTCCAGCCGTTG
 ----AGTCTCTGTGCTGCTGAGGTTGCTGTCTCTG--TCATTGTGCCTTCTGCCGTTT
 ----AGTCTCTGCG--TGTGAAGGTGCTGTCTGTT--CATTGTGCCTTCCACCTT--
 ----AGTCTCTGCG--TGTGAAGGTGCTGTCTGTT--CATTGTGCCTTCCACCTT--
 ----AGACCTCTGCG--TGTGAAGGTGCTGTCCAGAC--CATTGTGCCTGCCACCGTTT
 ----AGACCTCTGCG--TGTGAAGGTGCTGTCCAGAC--CATTGTGCCTTCCACCTTTT
 ----TCTTCCACGTGA----AAGGTGCTGTCT--GG--CCGCGGCGTGGCCTCCACCG
 ----TCTTCTACGTGA----AAGGTGCTGTCT--GG--CCGCGGCGTGGCCTCCACCG

 ----CCTCTTCTGTGA----CAGGTGCTTGTCTG--CCGGTGCCTTCCAGCCGTTG
 ----GCTCTTCTGTGA----CAGGTGCTTGTCTG--ACGGTGCCTTCCAGCCGTTG
 ----GCTCTTCTGTGA----CAGGTGCTTGTCTG--ACGGTGCCTTCCAGCCGTTG
 ----GCTCTTCTGTGA----CAGGTGCTTGTCTG--ACGGTGCCTTCCAGCCGTTG
 ----GCTCTTCTGTGA----CAGGTGCTTGTCTG--ACGGTGCCTTCCAGCCGTTG

 AGCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 AGCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC
 ACCGCAACCAGCAGGCAAAGTCAGAGGACCACCAGCAGACAGTCGCTCCACTTCTCTTTC

AY198335_Carcharodon_carcharias CGC-----GACTC-----AATCCCC-CGTGGGGGTCTCAGC
 EF194109_Cetorhinus_maximus -----
 AF515443_Isurus_paucus CGC-----GACTC-----AATCCCC-CGTGGGGGTCTCAGC
 AF515444_Lamna_nasus CAC-----GACTC-----AATCCCC-CGTGGGGGTCTCAGC
 AF515442_Isurus_oxyrinchus CGC-----CACTC-----AATCCCC-CGTGGGGGTCTCAGC
 JN008711_Rhizoprionodon_acutus GAGCCTTGCCCAACTGACTGTACATATGCTTGCTGGCACTGT-CCT--TGGCATCCGGC
 JN008712_Rhizoprionodon_taylori TGCAT--CCCTCGGCG--AGTACCGCTGCCACCT-GGCTCGGT-CCT--AGGCGTCTGGC
 AY033819_Carcharhinus_obscurus -----TTGGCGCG--AGTACCGCTGCCTCCT-GGCTCAGT-CCT--AGGCGTCTGGC
 AF513986_Carcharhinus_falciiformis TGCACACCTTGTGCGG--GGGACCGCTGCCTCCT-GGCTCAGT-CCA--AGGGTCTGGC
 AY033820_Carcharhinus_plumbeus GCA--CACCTTGGCG--AGTACCGCTGCCTCCT-GGCTCAGT-CCT--AGGCGCTGGC
 AF515441_Prionace_glauca TGC--ACTC-----CTT-GGCTCAGT-CCT--AGGCGTCTGTC
 KM455551_Mustelus_punctulatus_partial CTTG-----CAGCC--TGTGCGCTCCGCCGCC--CTGGCTT-CCTCTCGGCGTCCGG
 KM455552_Mustelus_mustelus_partial CTCG-----CAGCC--CGTGCCTCCGCCGCC--CGGCTT-CCTCTTGGCGTCCGG
 AY860840_Sphyrna_zygaena -----
 AY858052_Sphyrna_lewini -----
 AY860837_Sphyrna_mokarran -----
 JN008713_Rhizoprionodon_oligolinx CCGC-----AACAC--AGTACAATG-CTGACT-TGCTCTGT-CCTTGCCCTCTGGC
 JN008714_Rhizoprionodon_lalandei CCGC-----AACAC--AGTACAATGCTGACT-TGCTCTGT-CCTTGACCCCTCTGGC
 JN008715_Rhizoprionodon_longurio CCGC-----AACAC--AGTACAATG-CTGACT-TGCTCTGT-CCTTGAGCCCTCTGGC
 JN008717_Rhizoprionodon_terraenovae CCGC-----AACAC--AGTACAATG-CTGACT-TGCTCTGT-CCTTGACCATCTGGC
 JN008719_Rhizoprionodon_porosus CCGC-----AACAC--AGTACAATG-CTGACT-TGCTCTGT-CCTTGACCATCTGGC

 Isogoxy_ITS2_001 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_009 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_004 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_007 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_008 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_002 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_010 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_003 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_005 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 Isogoxy_ITS2_006 TCACACACTGTTCTGTGCCG----GAGCACCCGAACCGTTCCAACACTGCGGATCCT---T
 AY198335_Carcharodon_carcharias TCTGTGCTAGTAGGCTGGCCACGC---CACCTGTCTCGCACCTCTTTGTCTTTT--
 EF194109_Cetorhinus_maximus TCTGTGCTAGTAGGCTGGCCATTC---CACCTGTCTCGCACCTCTTTGTATTT--
 AF515443_Isurus_paucus TCTGTGCTAGTAGGCTGGCCATTC---CACCTGTCTCGCACCTCTTTGTATTT--
 AF515444_Lamna_nasus TCTGTGCTAGTAGGCTGGCCATTC---CACCTGTCTCGCACCTCTTTGTATTT--
 AF515442_Isurus_oxyrinchus TCTGTGCTAGTAGGCTGGCCATTC---CACCTGTCTCGCACCTCTTTGTATTT--
 JN008711_Rhizoprionodon_acutus CTGTCCAATACTGT-GGCAGGCCGTCGG---CCCCGGTCTG-CCTTCTCTTTAAAG
 JN008712_Rhizoprionodon_taylori TCTTTGCTCTGGCCGCTTTTCTC-----TCGC-CTCCTCACTC-TGTCGTA
 AY033819_Carcharhinus_obscurus TCTTTGCTCTGGCCGCTTTTCCA-----CCCC-CCCGTCACTC-TGTTGTA
 AF513986_Carcharhinus_falciiformis TCTTTGCTCTGGCCGCTTTTCTC-----CTCC-CCCC-----CTCACT
 AY033820_Carcharhinus_plumbeus TCTTTGCTCTGGCCGCTTTTCCCC-----C-CC-TCCTC-----TGGTGA
 AF515441_Prionace_glauca TCTTTGCTCTGGCCGACA-TTTC-----C-CC-TCCTC-----TGGTGT
 KM455551_Mustelus_punctulatus_partial CCTTTGCTCCGGCAGGCC-----CTGCTT--TTCTCTC
 KM455552_Mustelus_mustelus_partial CCTTTGCTCCGGCAGGCC---GTGTACCCACAGGCC-----CTGCTT--TTCTCTC
 AY860840_Sphyrna_zygaena -----
 AY858052_Sphyrna_lewini -----
 AY860837_Sphyrna_mokarran -----
 JN008713_Rhizoprionodon_oligolinx CCTTTGCTCTTGCAGGAGGCCGCTCCGCCCGTTCGCTTC-TCCCTCTTCTGTGTTGA
 JN008714_Rhizoprionodon_lalandei CCTTTGCTCTTGCAGGAGGCCGCTCCGCCCGTTCGCTTC-TCCCTCTTCTGTGTTGA
 JN008715_Rhizoprionodon_longurio CCTTTGCTCTTGCAGGAGGCCGCTCCGCCCGTTCGCTTC-TCACTCTTCTGTGTTGA
 JN008717_Rhizoprionodon_terraenovae CCTTTGCTCTTGCAGGAGGCCGCTCCGCCCGTTCGCTTC-TCACTCTTCTGTGTTGA
 JN008719_Rhizoprionodon_porosus CCTTTGCTCTTGCAGGAGGCCGCTCCGCCCGTTCGCTTC-TCACTCTTCTGTGTTGA

 Isogoxy_ITS2_001 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_009 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_004 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_007 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_008 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_002 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_010 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_003 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_005 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 Isogoxy_ITS2_006 TTTCCCGTGGAGGATGCCACAAATCGACAAGAGATTCGACCCT---GGCCCAAGCCGAAC
 AY198335_Carcharodon_carcharias TTTTTT--CCTCTCTCGTACGAGTACAGCCTTGCACCTGAAAACCCGACTGTGTGT
 EF194109_Cetorhinus_maximus -----
 AF515443_Isurus_paucus --C---T--TCTACCTCGTACGAGTAAAGCCTTGCACCTGAAAACCCGACTCTGTGT
 AF515444_Lamna_nasus --TTTT--CCTCTCTCGTACGAGTAAAGCCTTGCACCTGACAACCCGACTGTGTGT
 AF515442_Isurus_oxyrinchus --ATTT--ACTCTCTCGTACGAGTAAAGCCTTGCACCTGAAAACCCGACTGTGTGT
 JN008711_Rhizoprionodon_acutus GCCCTTTGACTGTGAGCGAGAGCCAGCAGCGCTGATTT-----CCGTTACCGTGGAA
 JN008712_Rhizoprionodon_taylori ACGCCTT--TGCCCTG---CGAGCCCGCAGCCGCTGCTTT-----CCGTTACTGTGGAA

AY033819_Carcharhinus_obscurus
 AF513986_Carcharhinus_falciiformis
 AY033820_Carcharhinus_plumbeus
 AF515441_Prionace_glauca
 KM455551_Mustelus_punctulatus_partial
 KM455552_Mustelus_mustelus_partial
 AY860840_Sphyrna_zygaena
 AY858052_Sphyrna_lewini
 AY860837_Sphyrna_mokarran
 JN008713_Rhizoprionodon_oligolinx
 JN008714_Rhizoprionodon_lalandei
 JN008715_Rhizoprionodon_longurio
 JN008717_Rhizoprionodon_terraenovae
 JN008719_Rhizoprionodon_porosus

 Isogoxy_ITS2_001
 Isogoxy_ITS2_009
 Isogoxy_ITS2_004
 Isogoxy_ITS2_007
 Isogoxy_ITS2_008
 Isogoxy_ITS2_002
 Isogoxy_ITS2_010
 Isogoxy_ITS2_003
 Isogoxy_ITS2_005
 Isogoxy_ITS2_006
 AY198335_Carcharodon_carcharias
 EF194109_Cetorhinus_maximus
 AF515443_Isurus_paucus
 AF515444_Lamna_nasus
 AF515442_Isurus_oxyrinchus
 JN008711_Rhizoprionodon_acutus
 JN008712_Rhizoprionodon_taylori
 AY033819_Carcharhinus_obscurus
 AF513986_Carcharhinus_falciiformis
 AY033820_Carcharhinus_plumbeus
 AF515441_Prionace_glauca
 KM455551_Mustelus_punctulatus_partial
 KM455552_Mustelus_mustelus_partial
 AY860840_Sphyrna_zygaena
 AY858052_Sphyrna_lewini
 AY860837_Sphyrna_mokarran
 JN008713_Rhizoprionodon_oligolinx
 JN008714_Rhizoprionodon_lalandei
 JN008715_Rhizoprionodon_longurio
 JN008717_Rhizoprionodon_terraenovae
 JN008719_Rhizoprionodon_porosus

 Isogoxy_ITS2_001
 Isogoxy_ITS2_009
 Isogoxy_ITS2_004
 Isogoxy_ITS2_007
 Isogoxy_ITS2_008
 Isogoxy_ITS2_002
 Isogoxy_ITS2_010
 Isogoxy_ITS2_003
 Isogoxy_ITS2_005
 Isogoxy_ITS2_006
 AY198335_Carcharodon_carcharias
 EF194109_Cetorhinus_maximus
 AF515443_Isurus_paucus
 AF515444_Lamna_nasus
 AF515442_Isurus_oxyrinchus
 JN008711_Rhizoprionodon_acutus
 JN008712_Rhizoprionodon_taylori
 AY033819_Carcharhinus_obscurus
 AF513986_Carcharhinus_falciiformis
 AY033820_Carcharhinus_plumbeus
 AF515441_Prionace_glauca
 KM455551_Mustelus_punctulatus_partial
 KM455552_Mustelus_mustelus_partial
 AY860840_Sphyrna_zygaena

AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

G-----AGCCCGGTCCGGTCTGTGTGTGTGTGTCAGGCCA
G-----AGCCCGGTCCGGTCCGAGTGT----TGTGAGGGCA
G-----AGCCCGGTCCGGTCCGAGTGT----TGTGAGGCCA
G-----AGCCCGGTCCGGTCCGAAATGT----TGTGAGGCCA
G-----AGCCCGGTCCGGTCCGAGTGT----TGTGAGGCCA

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
CGTCGGCACCCAGGGG-----TCGATCTCTCCGACGCGGATTACTCTGGGGGTCTG
-----TTGCTCCG-----
-----TTGCTCCG-----
-----TTGCTCCG-----
AGGGG----GAAAGTTGCCATGTTAACGTTCTGTGCGTGTGCG-----AGTGC-----
GGCGCGCGCGCACGACGCC-TGGTGACGTACCG-----
GGCGCACACAGCCAGTGCCTGTTGACGTAGCGTGTG-----TGGTC--
GGCGCACACAGCCAGTGCCTGTTGACGTACCGTGTG-----TGGTC--
GGCGCACACAGCCAGTGCCTGTTGACGTACCGTGTG-----TGGTC--
GGCGCACACAGCCAGTGCCTGTTGACGTACCGTGTG-----GTGGTC--
GCGCG----CA--GT-----A--CCGTGT--GCGTTCCGTGTGTGTCG--
GCGCG----CA--GT-----A--CCGTGTGTGCGTTCCGTGTGTGTCG--

CACAA----GCCAAGTTGCCATGTTACCTGCTCTGTG-----
CACAA----GCCAAGTTGCCGTGTTACGTGCTGTGTGTGTGTGTGTTT----GTG
CACAA----GCCAAGTTGCCGTGTTACGTGCTGTGTGTGTGTGTGTGTGTGTG
CACAA----GCCAAGTTGCCGTGTTACGTG--TGTGTGTGTGTGTGTGTGTGTGTG
CACAA----GCCAAGTTGCCGTGTTACGTG--CTGTGTGTGTGTGTGTGTGTGTGTG

Isogoxy_ITS2_001
Isogoxy_ITS2_009
Isogoxy_ITS2_004
Isogoxy_ITS2_007
Isogoxy_ITS2_008
Isogoxy_ITS2_002
Isogoxy_ITS2_010
Isogoxy_ITS2_003
Isogoxy_ITS2_005
Isogoxy_ITS2_006
AY198335_Carcharodon_carcharias
EF194109_Cetorhinus_maximus
AF515443_Isurus_paucus
AF515444_Lamna_nasus
AF515442_Isurus_oxyrinchus
JN008711_Rhizoprionodon_acutus
JN008712_Rhizoprionodon_taylori
AY033819_Carcharhinus_obscurus
AF513986_Carcharhinus_falciiformis
AY033820_Carcharhinus_plumbeus
AF515441_Prionace_glauca
KM455551_Mustelus_punctulatus_partial
KM455552_Mustelus_mustelus_partial
AY860840_Sphyrna_zygaena
AY858052_Sphyrna_lewini
AY860837_Sphyrna_mokarran
JN008713_Rhizoprionodon_oligolinx
JN008714_Rhizoprionodon_lalandei
JN008715_Rhizoprionodon_longurio
JN008717_Rhizoprionodon_terraenovae
JN008719_Rhizoprionodon_porosus

CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CACCTTAGGGG----G-----ACAGAGAGGACGGCGCCTCTGCGACACCCAGCCGCGCT
CGCGTGGCTCCGAGGAGTAACGGCCGCGCTTCTGCCTATTCGCTACGACCTCAGATC

CGCGTGGCTCCGAGGAGTAACGGCCGCGCTTCCGCTATTCGCTACGACCTCAGATC
CGCGTGGCTCCGAGGAGTAACGGCCGCGCTTCTGCCTATTCGCTACGACCTCAGATC
CGCGTGGCTCCGAGGAGTAACGGCCGCGCTTCTGCCTATTCGCTACGACCTCAGATC
-----TTGTTGTGCATCCACTGTGTCAGCATCACC-----
-----TTGTTGGTGAGTGG--CTGTGCAGCCAGGCCATG-----
A-----GTGGCTGTGCATCCG--CTGTGCAGCCAGGCCATG-----
A-----GTGGCTGTGCATCCG--CTGTGCAGCCAGGCCATG-----
C-----ATGCTGTGCATCCG--CTGTGCAGCCAGGCCATG-----
A-----GTGCTGTGCATCCG--CTGTGCAGCCAGGCCATG-----
TGCCTG-----TGCATCCG--CTGTGCAGCCAGGCCATG-----
TGCCTG-----CGCATCCG--CTGTGCAGCCAGGCCATG-----

TGTGTGCGCGTGAGGAGTTGCCCTGCTGTGCATCCG--CTGTGCAGCAGCGGAGCCCGA
TGTGTGTGTGTCAGGAGTTGCCCTGTTGTGCATCCG--CTGTGCAGCAGCAGCAGCTCCGG
TGTGTGTGTGTCAGGAGTTGCCCTGCTGTGCATCCG--CTGTGCAGCAGCAGCAGCTCCGG
TGTGTGTGTGTCAGGAGTTGCCCTGCTGTGCATCCG--CTGTGCAGCAGCAGCAGCTCCGG
TGTGTGTGTGTCAGGAGTTGCCCTGCTGTGCATCCG--CTGTGCAGCAGCAGCAGCTCCGG
TGTGTGTGTGTCAGGAGTTGCCCTGCTGTGCATCCG--CTGTGCAGCAGCAGCAGCTCCGG

Isogoxy_ITS2_001 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_009 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_004 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_007 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_008 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_002 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_010 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_003 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_005 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 Isogoxy_ITS2_006 CGA-----CGCCGCCCGGAGGCCA---GCGAAGTGCATTGATTGACAAGCGACCC
 AY198335_Carcharodon_carcharias AGACGTGACAACC-----
 EF194109_Cetorhinus_maximus -----
 AF515443_Isurus_paucus AGACGTGACAACC-----
 AF515444_Lamna_nasus AGACG-----
 AF515442_Isurus_oxyrinchus AGACGTGACAACC-----
 JN008711_Rhizoprionodon_acutus -----CAGCCACTCACATTGCGTGCAAGGTTTACAGGAACCTT
 JN008712_Rhizoprionodon_taylori -----CACTTTGCGTGCAAGGTTTACAGG-----G
 AY033819_Carcharhinus_obscurus -----CACTTTGCGTGCAAGGTTTACAGG-----G
 AF513986_Carcharhinus_falciiformis -----CACTTTGCGTGCAAGGTTTACAGG-----G
 AY033820_Carcharhinus_plumbeus -----CACTTTGCGTGCAAGGTTTACAGG-----G
 AF515441_Prionace_glauca -----CACTTTGCGTGCAAGGTTTACAGG-----G
 KM455551_Mustelus_punctulatus_partial G-----CGAGCAGCGT-----ACGTGTGT
 KM455552_Mustelus_mustelus_partial CGA-----GCACGCTACCTGTGT-----GTGTGTGT
 AY860840_Sphyrna_zygaena -----
 AY858052_Sphyrna_lewini -----
 AY860837_Sphyrna_mokarran -----
 JN008713_Rhizoprionodon_oligolinx GCCCATCACCCTACTCACACT-----TTGCTGTGCAAGGTTTACAGGTTT
 JN008714_Rhizoprionodon_lalandei GCCCACC--ACCACCACCAGCACTCCTCACACTTTGCGTGCAAGG-TTAACAAGGTGTG
 JN008715_Rhizoprionodon_longurio GCCCACCACCACCACCAGCACTCCTCACACTTTGCGTGCAAGG-TTAACAAGGTGTG
 JN008717_Rhizoprionodon_terraenovae GCCCACCACCACCACCAGCACTCCTCACACTTTGCGTGCAAGG-TTAACAAGGTGTG
 JN008719_Rhizoprionodon_porosus -----

 Isogoxy_ITS2_001 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_009 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_004 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_007 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_008 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_002 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_010 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_003 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_005 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 Isogoxy_ITS2_006 TCAGACAGACGTAGCCCCGGGAGGA-----ACCCGGGGCCGCAAAGTGCGTTT
 AY198335_Carcharodon_carcharias -----
 EF194109_Cetorhinus_maximus -----
 AF515443_Isurus_paucus -----
 AF515444_Lamna_nasus -----
 AF515442_Isurus_oxyrinchus -----
 JN008711_Rhizoprionodon_acutus GTGCGTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 JN008712_Rhizoprionodon_taylori TGTGCTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 AY033819_Carcharhinus_obscurus TG--TTGCTTTCAGCGCTGGAAGGTATGCCTTGAGGAGCGGCCGCCACACAGC--AACA
 AF513986_Carcharhinus_falciiformis TGT-TGCCTTCAAGCGCTGGAAGGTATGCCTTGAGGAGCGGCCGCCACACAGC--AACA
 AY033820_Carcharhinus_plumbeus TG--TTGCTTTCAGCGCTGGAAGGTATGCCTTGAGGAGCGGCCGCCACACAGC--AACA
 AF515441_Prionace_glauca TG--TTGCTTTCAGCGCTGGAAGGTATGCCTTGAGGAGCGGCCGCCACACAGC--AACA
 KM455551_Mustelus_punctulatus_partial GTGTGTTCCCGAAGCGCGGGAGGC---GCCGATGACCGGCCGCCAGAGCACT-CGT-
 KM455552_Mustelus_mustelus_partial GTGTGTTCCCGAAGCGCGGGAGGC---GCCGATGACCGGCCGCCAGAGCACT-CGT-
 AY860840_Sphyrna_zygaena -----
 AY858052_Sphyrna_lewini -----
 AY860837_Sphyrna_mokarran -----
 JN008713_Rhizoprionodon_oligolinx GTTGTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 JN008714_Rhizoprionodon_lalandei TGTGTTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 JN008715_Rhizoprionodon_longurio TGTGTTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 JN008717_Rhizoprionodon_terraenovae TGTGTTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT
 JN008719_Rhizoprionodon_porosus TGTGTTGCTGCAAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTTACAGGTTT

 Isogoxy_ITS2_001 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_009 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_004 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_007 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_008 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_002 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----
 Isogoxy_ITS2_010 AAAGTGTGATGATCAATGTGCTCTGC-----AATTCACATTAATTC-----

Isogoxy_ITS2_003	AAAGTGTGCGATGATCAATGTGCCTGC-----AATTCACATTAATTC----
Isogoxy_ITS2_005	AAAGTGTGCGATGATCAATGTGCCTGC-----AATTCACATTAATTC----
Isogoxy_ITS2_006	AAAGTGTGCGATGATCAATGTGCCTGC-----AATTCACATTAATTC----
AY198335_Carcharodon_carcharias	-----
EF194109_Cetorhinus_maximus	-----
AF515443_Isurus_paucus	-----
AF515444_Lamna_nasus	-----
AF515442_Isurus_oxyrinchus	-----
JN008711_Rhizoprionodon_acutus	AGCTGGGTGTTGCTGCCTTGGTATACGAC-----
JN008712_Rhizoprionodon_taylori	CCGC-----TTGCTGCCTCTTGCTTACGACCTCAGCTCAGACGAGTCAACCC
AY033819_Carcharhinus_obscurus	AAGCTGTTGTTGCTGCCTCTTGCTTACGACCTCAGCTCAGAC-----
AF513986_Carcharhinus_falciiformis	AAGCTGTTGTTGCTGCCTCTTGCTTACGACCTCAGCTCAGAC-----
AY033820_Carcharhinus_plumbeus	AAGCTGTTGTTGCTGCCTCTTGCTTACGACCTCAGCTCAGAC-----
AF515441_Prionace_glauca	AAGCTGTTGTTGCTGCCTCATGCTTACGACCTCAGCTCAGAC-----
KM455551_Mustelus_punctulatus_partial	-----TGCT-----
KM455552_Mustelus_mustelus_partial	-----TGCTTGCTTACGACCTCAGATCAGGAC-----
AY860840_Sphyrna_zygaena	-----
AY858052_Sphyrna_lewini	-----
AY860837_Sphyrna_mokarran	-----
JN008713_Rhizoprionodon_oligolinx	TGCTCGGTGTTGCTGCCTTTTGATTACGACCTCAGCTCAGACGTGTCAACCC
JN008714_Rhizoprionodon_lalandei	AGCTCGGTGTTGCTGCCTTTTGATTACGACCTCAGCTCAGACGTGTCAACCC
JN008715_Rhizoprionodon_longurio	AGCTCGGTGTTGCT-----
JN008717_Rhizoprionodon_terraenovae	AGCTCGGTGTTGCTGCCTTTTGATTACGACCTCAGCTCAGACGTGTCAACCC
JN008719_Rhizoprionodon_porosus	AGCTCGGTGTTGCTGCCTTTTGATTACGACCTCAGCTCAGACGTGTCAACCC

Supplement 2.ITS2_intraspecific_alignment_clustaW

CLUSTAL O(1.2.2) multiple sequence alignment

```
Isogoxy_ITS2_001 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_009 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_004 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_007 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_008 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_002 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_010 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_003 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_005 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
Isogoxy_ITS2_006 ACACACCTACCTGCACGCAAAGTGCATGGACTGGGCTGCACAGCCACCGACCCACACACG
*****

Isogoxy_ITS2_001 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_009 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_004 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_007 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_008 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_002 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_010 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_003 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_005 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
Isogoxy_ITS2_006 GTACGTCACGAGGCTGTGTGTGTGTGCGCCCTCAAGACACTGGGGCCCCGCACACCCGAC
*****

Isogoxy_ITS2_001 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_009 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_004 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_007 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_008 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_002 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_010 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_003 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_005 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
Isogoxy_ITS2_006 CACCGGCTCGGCACATCGACTCTTCCAGAGAAACCAACGTGGCGAGGTGTGACTGCACT
*****

Isogoxy_ITS2_001 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_009 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_004 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_007 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_008 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_002 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_010 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_003 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_005 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
Isogoxy_ITS2_006 CCCACGGTACGGAAGCAGCGGCTGGCGGCTCGCAGCGCAAAGGCGTTACAACAGAGTG
*****

Isogoxy_ITS2_001 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_009 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_004 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_007 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_008 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_002 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_010 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_003 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_005 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
Isogoxy_ITS2_006 AGGGGGAAAAAGCCAGCCAGAGCGAAAGAGCCAGGCGCCTGGGACTGAGCCAGGAGGCAG
*****

Isogoxy_ITS2_001 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_009 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_004 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_007 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_008 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_002 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_010 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_003 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_005 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
Isogoxy_ITS2_006 CGGTACTCGCCAAGGTTTGCAAACCGTGGGAAGGCACAATTGACCGGACAGCACCTTC
*****

Isogoxy_ITS2_001 ACACGCAGAGGACTTGACAGCAGCAAGTACGGGCACAGACGTCCGAGCAAGGACCGCAA
```


Isogoxy_ITS2_001 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_009 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_004 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_007 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_008 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_010 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_003 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_005 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG
Isogoxy_ITS2_006 TCGACGCCGCCGGAGGCCAGCGAAGTGCGATTGATTGACAAGCGACCCTCAGACAGACG

Isogoxy_ITS2_001 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_009 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_004 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_007 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_008 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_002 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_010 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_003 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_005 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
Isogoxy_ITS2_006 TAGCCCCGGGAGGAACCCGGGGCCGCAAAGTGCGTTCAAAGTGTTCGATGAT
