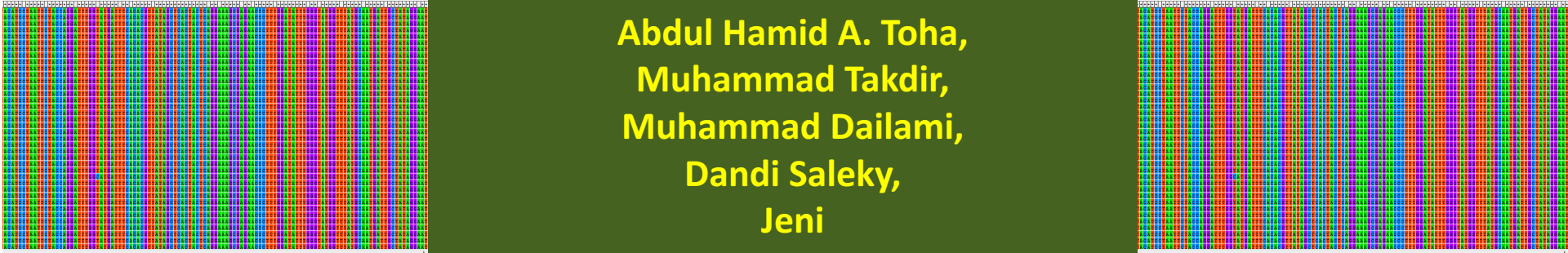


Bukti Genetik Identitas Lobster *Panulirus versicolor* berdasarkan “DNA Barcoding”



**Abdul Hamid A. Toha,
Muhammad Takdir,
Muhammad Dailami,
Dandi Saleky,
Jeni**

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Fakultas Perikanan dan Ilmu Kelautan
Universitas Papua
2017**

Latar Belakang

Lobster merupakan salah satu komoditas terpenting dunia perikanan. BHS adalah bentang laut yang kaya dengan biota laut dan memiliki endemitas yang tinggi



Pendekatan morfologi memiliki keterbatasan dalam identifikasi spesies

“DNA Barcoding”

Sistem identifikasi spesies. Identifikasi tingkat spesies dengan barcode DNA biasanya menyesuaikan dengan sekuens DNA pendek dari bagian standar genom.



• Alat

- Alat justifikasi untuk identifikasi spesies
- Alat wajib untuk deteksi spesies dan identifikasi spesimen.



• Metode

- Metode yang cepat, akurat, dan standar untuk identifikasi tingkat spesies, dengan menggunakan sekuens DNA pendek.



• Cara

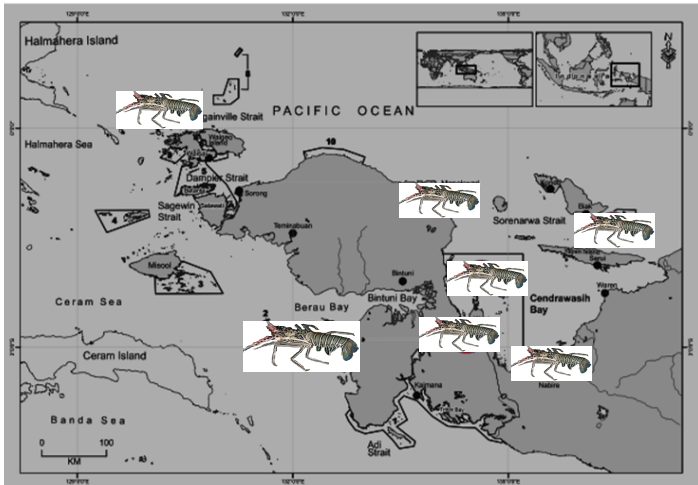
- Cara untuk katalog kehidupan. Keterbatasan spesies bersifat samar dalam kasus mikroba, sehingga barcode dapat memberi informasi yang berguna untuk mengevaluasi ekologi dan menentukan prioritas konservasi

Tujuan

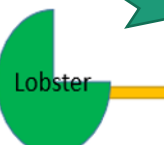
- Menentukan identitas lobster berdasarkan “DNA Barcoding”

Metode

A



Perairan BHS



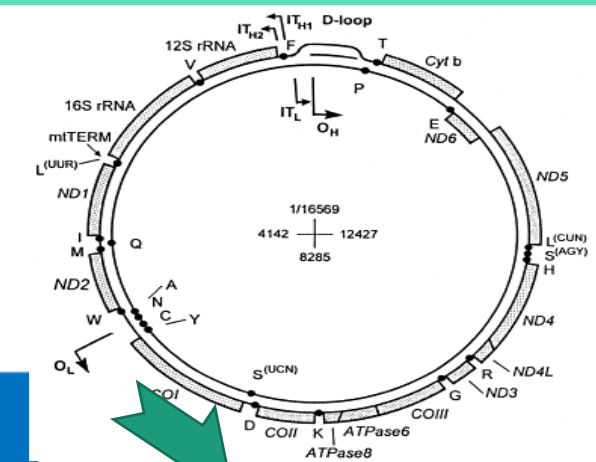
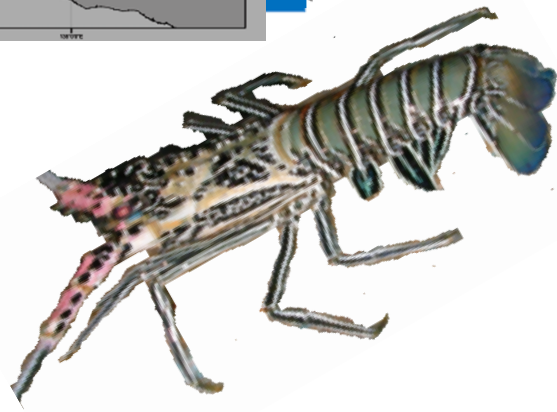
Ekstraksi dan Amplifikasi PCR

UNIPA dan UB

Sekuensing

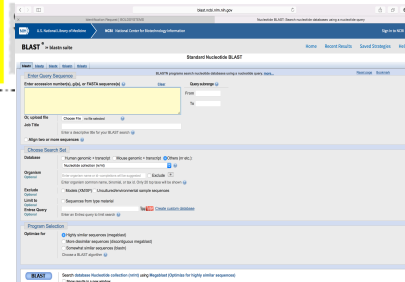
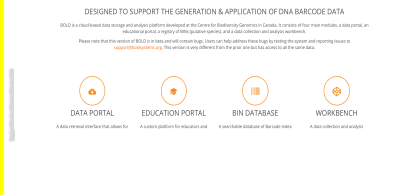
Genetika Science, Jakarta

Analisis Data



B

C

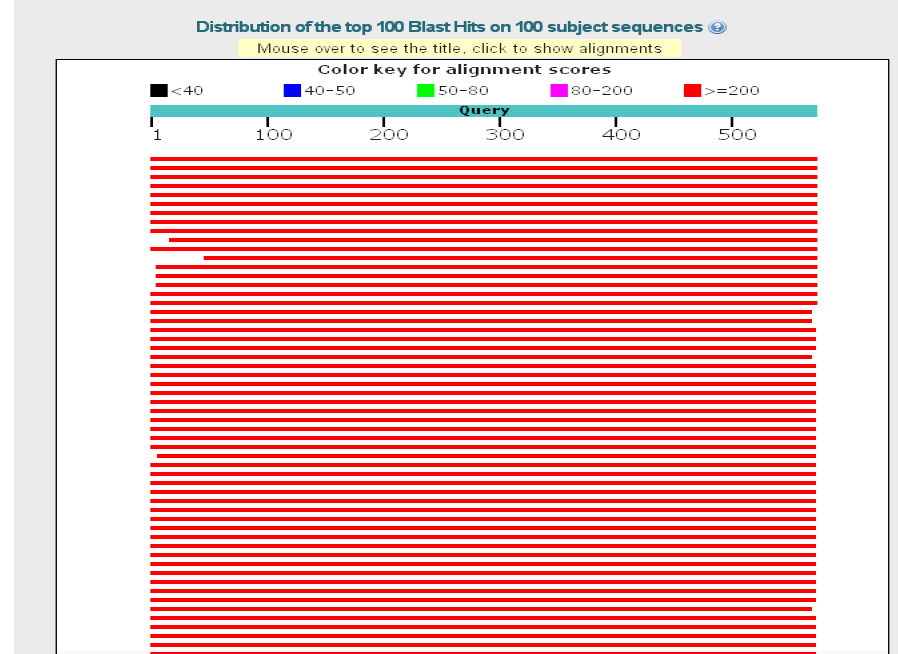


Hasil Sekuensing

TTCCTTAAGACTTATCATTTCGAGCAGAACTGGGACAACCAGGAAGACTAATTG
GAGATGATCAAATTTACAATGTAGTAGTGACAGCCCATGCTTTCGTAATAATTTT
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TACTAGGTGCTCCAGATATGGCATTTCCTCCGAATAAACAACATAAGATTCTGAC
TCTTACCACCGTCTCTAACACTTCTCCTAGCCAGTGGTATAGTAGAAAGAGGAG
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CTACTCCTATCTCTCCAGTACTAGCAGGAGCTATTACAATACTCCTTACAGATC
GTAACCTGAATACATCATTCTTTGAT

Hasil

- BLAST



Sequences producing significant alignments:

Select: [All](#) [None](#) Selected:0

[Alignments](#) [Download](#) [GenBank](#) [Graphics](#) [Distance tree of results](#)

	Description	Max score	Total score	Query cover	E value	Ident	Accession
<input type="checkbox"/>	Panulirus versicolor voucher LPvP cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1098	1098	100%	0.0	100%	gi949175589 KT001513.1
<input type="checkbox"/>	Panulirus versicolor voucher JSPWW4 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1098	1098	100%	0.0	100%	gi1564282691 KF548584.1
<input type="checkbox"/>	Panulirus versicolor voucher NBFGR-CHN-PV3 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1098	1098	100%	0.0	100%	gi1374669104 JQ229882.1
<input type="checkbox"/>	Panulirus versicolor voucher JSPWW3 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1092	1092	100%	0.0	99%	gi1564282689 KF548583.1
<input type="checkbox"/>	Panulirus versicolor voucher LPvO cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1087	1087	100%	0.0	99%	gi949175587 KT001512.1
<input type="checkbox"/>	Panulirus versicolor mitochondrion, complete genome	1081	1081	100%	0.0	99%	gi430728772 KC107808.1
<input type="checkbox"/>	Panulirus versicolor voucher JSPVH8 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1075	1075	100%	0.0	99%	gi1564282695 KF548586.1
<input type="checkbox"/>	Panulirus versicolor clone AU2 cytochrome c oxidase subunit I (COX1) gene, partial cds; mitochondrial	1075	1075	100%	0.0	99%	gi1346421817 JUN418936.1
<input type="checkbox"/>	Panulirus versicolor cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial gene for mitochondrial product	1075	1075	100%	0.0	99%	gi113183876 AF339472.1
<input type="checkbox"/>	Panulirus versicolor mitochondrial COI gene 5' side for cytochrome oxidase subunit 1, partial cds	1067	1067	97%	0.0	100%	gi183699376 AB244283.1
<input type="checkbox"/>	Panulirus versicolor isolate ZS cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1063	1063	100%	0.0	99%	gi1357002484 JN591366.1
<input type="checkbox"/>	Panulirus versicolor isolate P. versi cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1004	1004	91%	0.0	99%	gi117257049 JX275386.1

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BLAST » blastn suite » RID-0W8TMGV6015 | Home | Recent Results | Saved Strategies | Help

Tax BLAST report

[Taxonomy report description](#)

RID: 0W8TMGV6015 (Expires on 11-18 06:45 am)

Query ID: H|Query_210849 | Database Name: nr
 Description: None | Description: Nucleotide collection (nr)
 Molecule type: nucleic acid | Program: BLASTN 2.7.1+ » Citation
 Query Length: 571

Lineage Report

[Organism Report](#) | [Taxonomy Report](#)

Organism	Blast Name	Score	Number of Hits	Description
Palinuridae	crustaceans		119	
• Panulirus	crustaceans		117	
.. Panulirus versicolor	crustaceans	1098	13	Panulirus versicolor hits
.. Panulirus simpsoni	crustaceans	667	3	Panulirus simpsoni hits
.. Panulirus inflatus	crustaceans	648	2	Panulirus inflatus hits
.. Panulirus homarus homarus	crustaceans	617	24	Panulirus homarus homarus hits
.. Panulirus homarus	crustaceans	612	37	Panulirus homarus hits
.. Panulirus homarus megasculpta	crustaceans	600	1	Panulirus homarus megasculpta hits
.. Panulirus polihhaus	crustaceans	589	3	Panulirus polihhaus hits
.. Panulirus ornatus	crustaceans	579	17	Panulirus ornatus hits
.. Panulirus laeviscauda	crustaceans	577	1	Panulirus laeviscauda hits
.. Panulirus reagus	crustaceans	573	16	Panulirus reagus hits
• Puerulus sewelli	crustaceans	558	2	Puerulus sewelli hits

Download | GenBank | Graphics

Panulirus versicolor voucher LPvP cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial
 Sequence ID: [gi|949175589|KT001513.1](#) | Length: 630 | Number of Matches: 1

Range 1: 5 to 575 | GenBank | Graphics | Next Match | Previous Match

Score	Expect	Identities	Gaps	Strand
1098 bits(571)	0,0	571/571(100%)	0/571(0%)	Plus/Plus

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Query 1      TTCCTTAAGACTTATCATTTCGAGCAGAACTGGGACAACCAGGAAGACTAATTGGAGATGA 60
Sbjct 5      TTCCTTAAGACTTATCATTTCGAGCAGAACTGGGACAACCAGGAAGACTAATTGGAGATGA 64

Query 61     TCAAAATTTACAATGTAGTAGTGACAGCCCATGCTTTTCGTAATAATTTTCITTTATAGTAAT 120
Sbjct 65     TCAAAATTTACAATGTAGTAGTGACAGCCCATGCTTTTCGTAATAATTTTCITTTATAGTAAT 124

Query 121    GCCTATTATAAATTTGGTGGATTTGGTAATTGACTTGTTCCAATTATACTAGGTGCTCCAGA 180
Sbjct 125    GCCTATTATAAATTTGGTGGATTTGGTAATTGACTTGTTCCAATTATACTAGGTGCTCCAGA 184

Query 181    TATGGCATTTCGCCGAATTAACAACATAAGATTCTGACTCTTACCACCGTCTCTAACACT 240
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Query 361    CCTAGCCGGTGTATCCTCAATCCTAGGTGCCGTAACCTTTTATTACAACAGTAATTAACAT 420
Sbjct 365    CCTAGCCGGTGTATCCTCAATCCTAGGTGCCGTAACCTTTTATTACAACAGTAATTAACAT 424

Query 421    ACGATCCTCAGGTATAACATTCGACCGAATACCTTTTATTCGTAATGATCAGTTTTCATTAC 480
Sbjct 425    ACGATCCTCAGGTATAACATTCGACCGAATACCTTTTATTCGTAATGATCAGTTTTCATTAC 484

Query 481    CGCCATCCTGCTACTCCTATCTCTCCAGTACTAGCAGGAGCTATTACAATACTCCTTTAC 540
Sbjct 485    CGCCATCCTGCTACTCCTATCTCTCCAGTACTAGCAGGAGCTATTACAATACTCCTTTAC 544

Query 541    AGATCGTAACTGAAATACATCATCTCTTTGAT 571
Sbjct 545    AGATCGTAACTGAAATACATCATCTCTTTGAT 575
  
```

Description	Score	E value	Accession
Panulirus versicolor (painted spiny lobster) [crustaceans]			
▼ Next ▲ Previous ▲ First			
Panulirus versicolor voucher LPvP cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1098	0.0	KT001513
Panulirus versicolor voucher JSPW4 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1098	0.0	KF548584
Panulirus versicolor voucher JSPVK1 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1098	0.0	KF548585
Panulirus versicolor voucher NBFGR-CHN-PV3 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1098	0.0	JQ229882
Panulirus versicolor voucher JSPW3 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1092	0.0	KF548583
Panulirus versicolor voucher LPvO cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1087	0.0	KT001512
Panulirus versicolor mitochondrion, complete genome	1081	0.0	KC107808
Panulirus versicolor voucher JSPVH8 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1075	0.0	KF548586
Panulirus versicolor clone AU2 cytochrome c oxidase subunit I (COX1) gene, partial cds; mitochondrial	1075	0.0	JN418936
Panulirus versicolor cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial gene for mitochondrial product	1075	0.0	AF339472
Panulirus versicolor mitochondrial COI gene 5' side for cytochrome oxidase subunit 1, partial cds	1067	0.0	AB244283
Panulirus versicolor isolate ZS cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	1063	0.0	JN591366
Panulirus versicolor isolate P. versi cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial	1004	0.0	KX275386



Panulirus stimpsoni (Chinese spiny lobster) [crustaceans]			
▼ Next ▲ Previous ▲ First			
Panulirus stimpsoni cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial gene for mitochondrial product	667	0.0	AF339471
Panulirus stimpsoni isolate ZG cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	650	0.0	JN591365
Panulirus stimpsoni mitochondrion, complete genome	650	0.0	GQ292768
Panulirus inflatus [crustaceans]			
▼ Next ▲ Previous ▲ First			
Panulirus inflatus cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	648	0.0	FJ174964
Panulirus inflatus cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial gene for mitochondrial product	648	0.0	AF339459
Panulirus homarus homarus [crustaceans]			
▼ Next ▲ Previous ▲ First			
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL5 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	617	9e-173	JQ229918
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL7 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	612	5e-171	JQ229920
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL4 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	606	3e-169	JQ229917
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH8 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	606	3e-169	JQ229915
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH4 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	606	3e-169	JQ229911
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH3 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	606	3e-169	JQ229910
Panulirus homarus homarus voucher NBFGR-CHN-PHH-Vzq2 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	606	3e-169	JQ229888
Panulirus homarus homarus voucher NBFGR-CHN-PHH-Vzq7 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229926
Panulirus homarus homarus voucher NBFGR-CHN-PHH-Vzq6 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229925
Panulirus homarus homarus voucher NBFGR-CHN-PHH-Vzq3 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229922
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL6 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229919
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH7 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229914
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH6 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229913
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH5 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229912
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL2 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229886
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL1 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229885
Panulirus homarus homarus voucher NBFGR-CHN-PHH-CH1 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	600	1e-167	JQ229883
Panulirus homarus homarus voucher NBFGR-CHN-PHH-Vzq5 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	594	8e-166	JQ229924
Panulirus homarus homarus voucher NBFGR-CHN-PHH-KL8 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial	594	8e-166	JQ229921

- BoldSystem

BOLDSYSTEMS DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOGIN Q

IDENTIFICATION ENGINE: RESULTS

Results Summary [Download](#)

Query ID	Best ID	Search DB	Tree	Top %	Graph	Low %
unlabeled_sequence	<i>Panulirus versicolor</i>	COI SPECIES DATABASE		100.00		84.47

Query: unlabeled_sequence
Top Hit: Arthropoda Malacostraca - Decapoda - *Panulirus versicolor* (100%)

Search Result:

A species level match could not be made, the queried specimen is likely to be one of the following:

- Panulirus versicolor*
- Panulirus homarus*

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Order

Decapoda[99 individuals][4 species]

Family

Palinuridae[99 individuals][4 species]

Species

Panulirus homarus[74 individuals]

Panulirus inflatus[2 individuals]

Panulirus stimpsoni[3 individuals]

Panulirus versicolor[20 individuals]

Ringkasan Identifikasi

BOLD SYSTEMS

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[TAXONOMY](#)
[WORKBENCH](#)
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For a hierarchical placement - a neighbor-joining tree is provided: TREE BASED IDENTIFICATION

Identification Summary

Taxonomic Level	Taxon Assignment	Probability of Placement (%)
Phylum	Arthropoda	100
Class	Malacostraca	100
Order	Decapoda	100
Family	Palinuridae	100
Genus	<i>Panulirus</i>	100

Similarity Scores of Top 99 Matches

Display: Top 20

Top 20 Matches

Phylum	Class	Order	Family	Genus	Species	Subspecies	Similarity (%)	Status
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>homarus</i>		100	Early-Release
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		100	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		99.82	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		99.82	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		99.82	Published 🔗
Arthropoda	Malacostraca	Decapoda	Palinuridae	<i>Panulirus</i>	<i>versicolor</i>		99.65	Published 🔗

Identifikasi berdasarkan Pohon Filogenetik

B Tree Result  

PDF tree : [View Tree](#) [Download Tree](#)

Export Tree to Newick Format : [Download File](#)

Taxonomy Report : [View Report](#)

Image List : [View Image List](#)

Spreadsheet : [View Spreadsheet](#)

NOTE : Query sequence will be marked red on the tree with BOLD sequences in black. GenBank sequences that are not represented in BOLD may be less up to date in terms of sequence accuracy and taxonomic identification and will be marked in blue.

Pohon Filogenetik

131.104.63.51

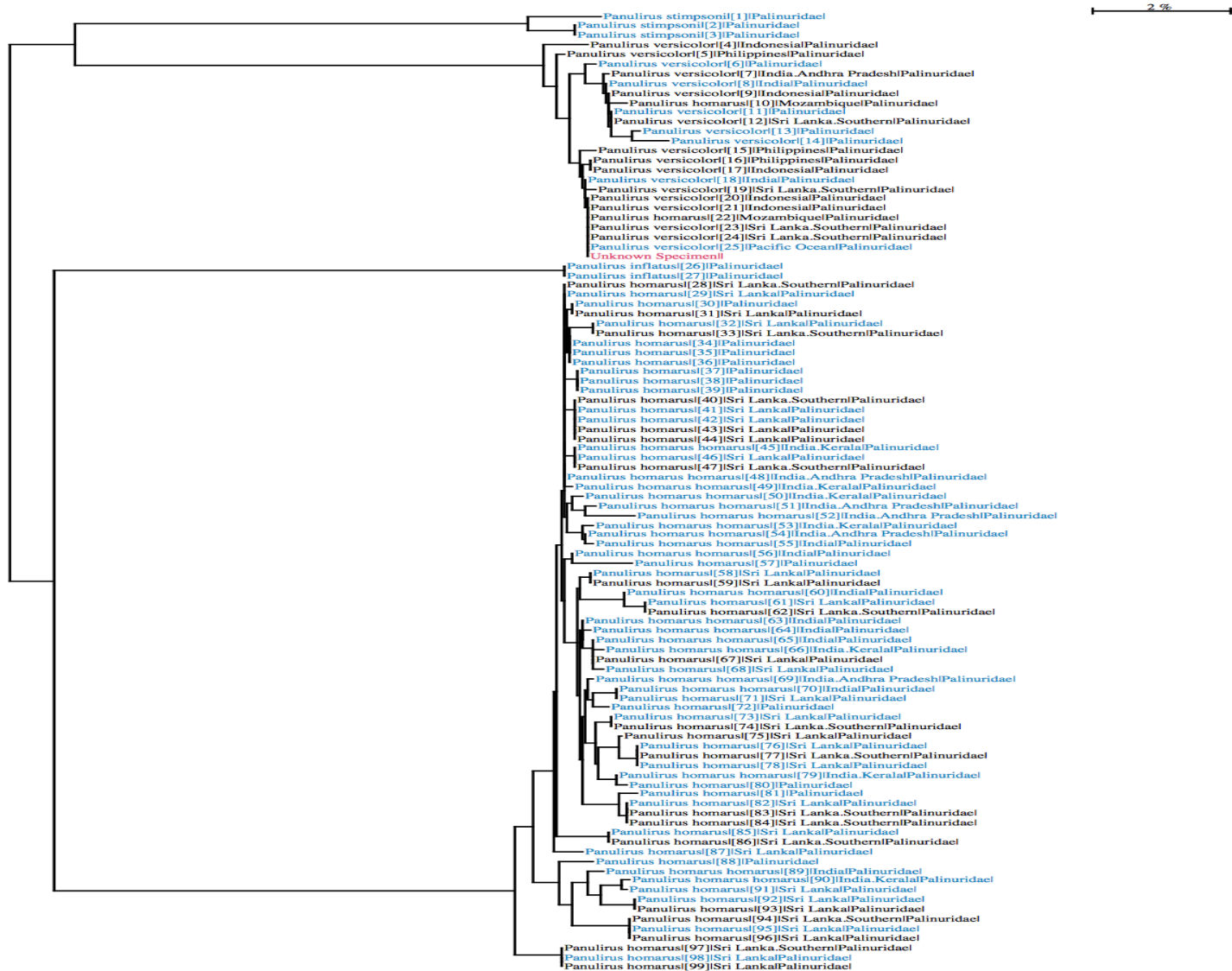


Foto Identifikasi

Image Library - Independent Analysis

Parameters

Records included:	All records
Filter image by orientation:	None
Aspect ratio:	Original
Results Summary	
Total records:	99

IMAGE NOT AVAILABLE

[1] AF339471
Panulirus stimpsoni

IMAGE NOT AVAILABLE

[2] JN591365
Panulirus stimpsoni

IMAGE NOT AVAILABLE

[3] NC_014339
Panulirus stimpsoni



[4] AINV-074 [Lateral]
Panulirus versicolor



[5] AINV-118 [Dorsal]
Panulirus versicolor

IMAGE NOT AVAILABLE

[6] NC_028627
Panulirus versicolor



[7] VE_9 [Lateral]
Panulirus versicolor

IMAGE NOT AVAILABLE

[8] JN418936
Panulirus versicolor



IMAGE NOT AVAILABLE

[9] AINV-016
Panulirus versicolor

IMAGE NOT AVAILABLE

[11] AF339472
Panulirus versicolor

Kesimpulan



Kode sampel	Spesies hasil BLAST	Nilai identity (%)	Kode akses NCBI*)	DNA Barcoding	Kemiripan (%)
Kokas	<i>P. versicolor</i>	98	gi 430728772 KC107808.1	<i>P. versicolor</i>	98.91
Raja Ampat	<i>P. versicolor</i>	99	gi 430728772 KC107808.1	<i>P. versicolor</i>	100
Biak	<i>P. versicolor</i>	99	gi 374669104 JQ229882.1	<i>P. versicolor</i>	99.79
Manokwari	<i>P. versicolor</i>	99	gi 564282691 KF548584.1	<i>P. versicolor</i>	100
Nabire	<i>P. versicolor</i>	99	gi 564282691 KF548584.1	<i>P. versicolor</i>	99.79
Numamuran	<i>P. versicolor</i>	100	gi 564282691 KF548584.1	<i>P. versicolor</i>	100
Serui	<i>P. versicolor</i>	99	gi 564282691 KF548584.1	<i>P. versicolor</i>	100
Jimbaran	<i>P. versicolor</i>	99	gi 374669104 JQ229882.1	<i>P. versicolor</i>	100
Ambon	<i>P. versicolor</i>	99	gi 374669104 JQ229882.1	<i>P. versicolor</i>	100
Bacan	<i>P. versicolor</i>	99	gi 430728772 KC107808.1	<i>P. versicolor</i>	99.69
Loloda	<i>P. versicolor</i>	98	gi 374669104 JQ229882.1	<i>P. versicolor</i>	99.75

TERIMA KASIH

Kemeristekdikti melalui hibah Fundamental Tahun 2017
Laboratorium Genetika Universitas Papua

