ANNUAL REPORT of the
CENTRE FOR WILDLIFE ECOLOGY

2018-2019

Department of Biological Sciences
Simon Fraser University

http://www.sfu.ca/biology/wildberg/NewCWEPage/CWEnewTestHome.htm

Dr. Ronald C. Ydenberg, Director

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#

I. HISTORY

/ 6789 :;8 (<=9>:?9@)<97A %?6B86:<?6 >67 %>6>7> C<D7D<E8 ! F:AG :;8 H>67>:8 ?E :;8 %>6>7<>6 C<D7D<E8 $89B<F8 <A :? I9?:8F: >67 F?6A89B8 H<=9>:?9@ J<97 I?IKD>:<?6A 6 :;8 LMA: F86:K9@G :;<A ;<A:?9<F>D H>67>:8 <A J9?>786<6= :? 86F?HI>AA ?:;89 86B<9?6H86:>D F?6F896A AKF; >A AI8F<8A >:

III. PERSONNEL

A. Research Team

1. Faculty and Research Associates

Name	*Position*
"?6 3786J89=	0<98F:?9G -9?E8AA?9
'?6@ C<DD<>HA	-9?E8AA?9
0>B<7 +9886	! AA?F<>:8 0<98F:?9G ! AA?F<>:8 -9?E8AA?9
0?B 1>6N	/ 6<B89A<:@ "8A8>9F; ! AA?F<>:8 Q ! 7YK6F: -9?E8AA?9
0>6 #AD89	/ $+$ $F<86:<A: Q ! 7YK6F: -9?E8AA?9

B. Steering Committee

Name	*Position*	*Affiliation*

IV. INTRODUCTION

' ;8 ><H ?E :;<A ! 66K>D "8I?9: <A :? =<B8 >6 ?B89B<8U ?E ?K9 >F:<B<:<8AG ?K:D<68 :;8 I9?=98AA ?6 68U >67 F?6:<6K<6= I9?Y8F:AG 78AF9<J8 :;8 I89A?668D <6B?DB87G >67 :? =<B8 A?H8 <67<F>:<?6 ?E ?K9 AF<86:<E<F >67 F?HHK6<:@ <6B?DB8H86: -98B<?KA ! 66K>D "8I?9:A >98 >B><D>JD8 E9?H :;8 %C # %?6:>F: KA B<> ?K9 U8JA<:8

;::I[QQUUU AEK F>QJ<?D?=@QU<D7J89=Q*8U%C#-:>=8Q%C#68U'8A:&?H8 ;:H

?9 F?6:>F: "?6 3786J89= >: @786J89= \ AEK F>

V. THE CWE IN ACTION

= N=(#" ,%"!#Y@K#Z#D=+#@[2X

B. Human Impacts on Birds

1. Contaminants and Toxicology

> 08B8D?IH86:>D68K9?:?R<F<:@?E H89FK9@<6J<97A

H8:;@DA<D?R>68A:? 8RI>67 >67 <HI9?B8:;8 FK9986: 7>:> A8: E9?H ;89 ($F . >:8 >67 F?DD8>=K8A
98F86:D@ AKJH<::87 > H>6KAF9<I: ?6 J<?>FFKHKD>:<?6 >67 J<?H>=6<E<F>:<?6 ?E -) 0 #A:? :;8

<6B8A:<=>:8 D?6=V:89H F;>6=8A <6 <6A8F: >JK67>6F8 <6 :;8 >JA86F8 ?E D?6=V:89H H?6<:?9<6= 7>:> $88 >DA? A8F:<?6 2) P J 1>67AF>I8VD8B8D 78:89H<6>6:A ?E J9887<6= 7<A:9<JK:<?6G I9?7KF:<B<:@ >67 E?9>=<6= <6)>96 $U>DD?UA >67 '988 $U>DD?UA

$88 >DA? A8F:<?6 2 ! L #>A:896 C ;<I-??9C<DD *(Threatened, COSEWIC).*

D. Coastal Ecology

1. Coastal Studies of Seabirds

(>9N &<IE689 S#6B<9?6H86: >67 %D<H>:8 %;>6=8 %>6>7>G 08D:> i C<D7D<E8 "8A8>9F; 0<B<A<?6TG :;8 $F<86:<E<F 0<98F:?9 ?E :;8 '9<>6=D8 AD>67 $8>J<97 "8A8>9F; $:>:<?6G >67 98I?9:A :;>: AKHH89 L_M` H>9N87 :;8 Lg:; @8>9 i > WK>9:89 F86:K9@V ?E ?I89>:<?6 ?E :;8 %C #hA A8>J<97 98A8>9F; >67 H?6<:?9<6= I9?=9>H ?6 '9<>6=D8 AD>67 ';8 L_M` E<8D7 F98U F?6A<A:87 ?E 0>B<7)9>7D8@S)<97 $:K7<8A %>6>7>TG !H?A %;?U S#%%%G 08D:> i

>98>A ';8A8 7>:> ;>B8 J886 KA87 :? 78AF9<J8 :;8 J9?>7 H?B8H86:A ?E)>99?UA +?D7868@8 :;9?K=;?K: :;8<9 >66K>D F@FD8 &?U8B89G :;8 AI>:<>D AF>D8 >67 AI>:<>DQ:8HI?9>D 98A?DK:<?6 ?E :;<A 7>:>A8: F>6 >DA? J8 KA87 :? >7798AA 98A8>9F; I9<?9<:<8A ?E :;8 E8789>D ,F8>6 -9?:8F:<?6 -D>6 >67 <786:<E<87 <6E?9H>:<?6 6887A ?E :;8 $8> 0KFN 5?<6: 286:K98 '8AA 4?9A:689 S ($F F>67<7>:8TG <6 F?DD>J?9>:<?6 U<:; $8>6)?@7 S#%%%T >67 (8=>6 C<DD<8 S#%%%T <A KA<6= :;8 8R:86A<B8 A>:8DD<:8 :8D8H8:9@ 7>:>A8: :? 8R>H<68 D>:<:K7<6>D B>9<>:<?6 <6 :;8 :<H<6= ?E 7<AF98:8 A:>=8A ?E :;8 >66K>D F@FD8 >67 >AA8AA :;8 78=988 ?E H<=9>:?9@ F?668F:<B<:@ J8:U886 U<6:89<6= I?IKD>:<?6A >F9?AA :;8 U8A:896 9>6=8 $;8 U<DD >DA? KA8 :;8 7>:> :? <786:<E@ U;86 >67 U;898 U<6:89<6= A8> 7KFNA U?KD7 J8 A86A<:<B8 :? >6:;9?I?=86<F >F:<B<:<8A ?6 :;8 ->F<E<F F?>A:A

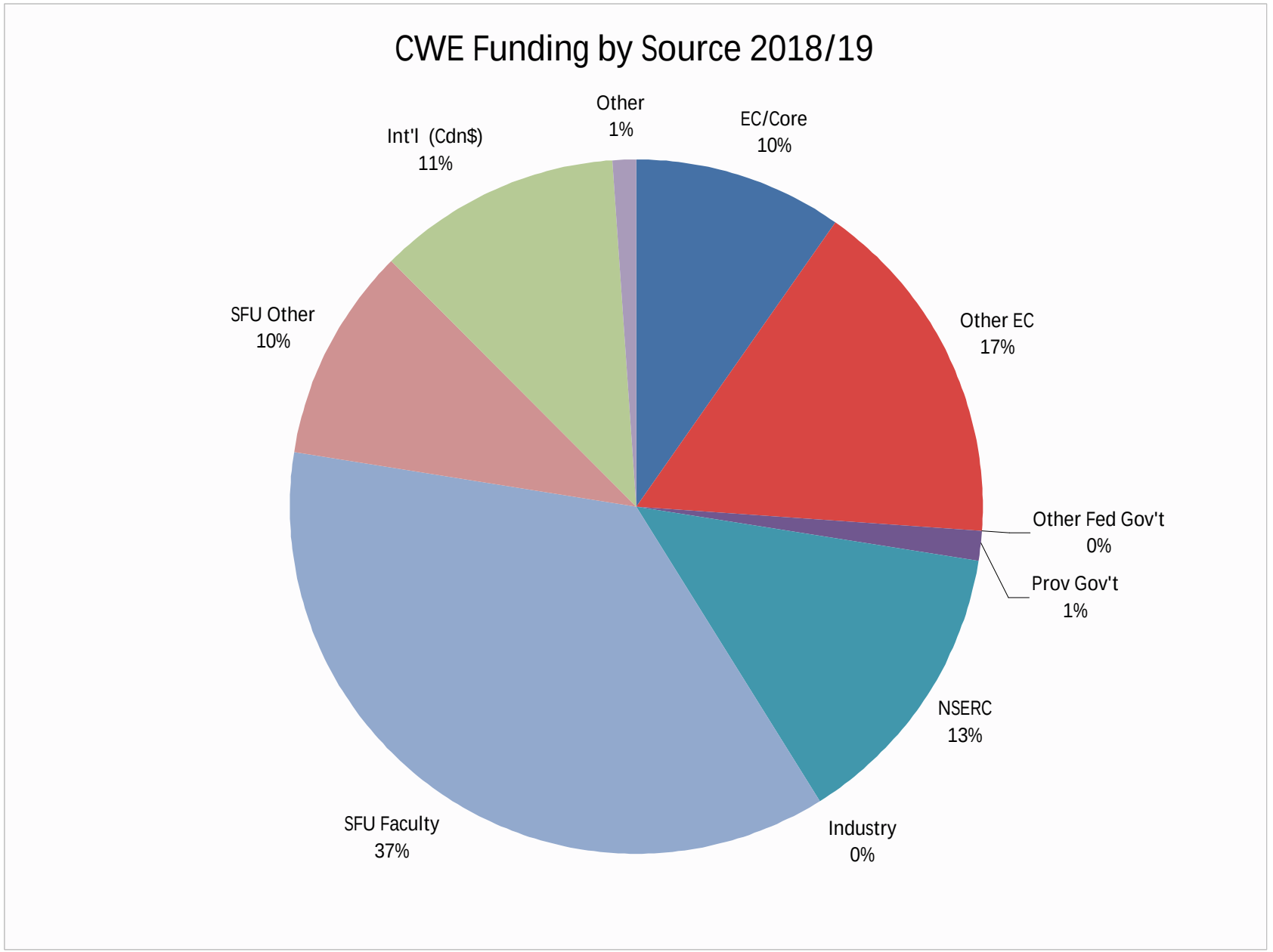
3. Movement Ecology of Black Oystercatchers

%C# ;>A <6<:<>:87 > 68U D?6=V:89H A:K7@ ?6 :;8 H?B8H86: 8F?D?=@ >67 ;>J<:>: KA8 ?E :;8)D>FN ,@A:89F>:F;89G >6 <67<F>:?9 AI8F<8A E?9 9?FN@ <6:89:<7>D ;>J<:>: <6 :;8 ->F<E<F *?9:;U8A: ';<A I9?Y8F: <A > F?DD>J?9>:<?6 <6B?DB<6= E8789>D >=86F<8A <6)% S#%%% >67 ->9NA %>6>7>T >67 !D>AN> S/$+$ >67 /$ *>:<?6>D ->9NA $89B<F8T U<:; >AA<A:>6F8 E9?H 6?6V=?B896H86:>D ?9=>6<A>:<?6A <6)% S1>AN88N)>@ %?6A89B>:<?6 $?F<8:@ >67 "><6E?98A: %?6A89B>:<?6 $?F<8:@T 4<8D7U?9N <6<:<>:87 <6 AI9<6= L_MO J@ 186> C>98 S ($F F>67<7>:8T U<DD KA8 78:><D87 A>:8DD<:8 :8D8H8:9@ 7>:> :? 78E<68 :;8 H?B8H86: >67 ;>J<:>: KA8 ?E JD>FN ?@A:89F>:F;89A <6 98D>:<?6 :;8 :<7>D >67 7<K96>D D<=;: F@FD8 >: 7<EE8986: A:>=8A ?E :;8 @8>9 &89 I9?Y8F: U<DD AKII?9: :;8 #%%% H>67>:8G K6789 :;8 E8789>D ,F8>6 -9?:8F:<?6 -D>6G :? F?67KF: 98A8>9F; >67 H?6<:?9<6= <6 ?9789 :? <HI9?B8 H>6>=8V H86: ?E :;8 F?>A:>D U>:89A ?E :;8 ->F<E<F F?>A: 4K:K98 U?9N U<DD >AA8AA :;8 79<B89A ?E H<=9>:<?6 <6 !D>AN>6 ?@A:89F>:F;89A >67 >AA8AA ;?U !D>AN>6 H<=9>6:A <6:89>F: >67 A;>I8 :;8 ;>J<:>: A8D8F:<?6 ?E)% 98A<786:A 7K9<6= :;8 U<6:89 H?6:;A

4. Coastal Usage by Migratory Shorebirds

';8 H>Y?9<:@ ?E :;8 U?9D7]A :;988 >67 > ;>DE :? E?K9 H<DD<?6 C8A:896 $>67I<I89A A:?I J9<8ED@ :? 98EK8D <6)?K67>9@)>@ ?9 ?6 "?J89:]A)>6N 7K9<6= :;8<9 >66K>D 6?9:;U>97 H<=9>:<?6G I9?B<7<6= > :;9<DD<6= A<=;: E?9 D?F>D 98A<786:A (KF; ?E :;8 AI8F<8A] I?IKD>:<?6 >DA? A:?IA ?B89 ?6 A?K:;U>97 H<=9>:<?6G E?DD?U<6= > ED<=;: ?B89 :;8 +KDE ?E !D>AN>)8F>KA8 ?E :;<AG :;8 AI8F<8A <A 9>6N87 <6 :;8 ;<=;8A: I9<?9<:@ FD>AA <6 :;8 79>E:)%V3KN?6 98=<?6 %C$ $;?98J<97 (>6>=8H86: -D>6 #>F; U<6:89G :;8 49>A89 "<B89 08D:> S4" 0T ;?A:A :;8 H?A: 6?9:;89D@ U<6:89<6= I?IKD>:<?6 ?E ->F<E<F 0K6D<6 1?F>D <6E?9H>:<?6 ?6 A;?98J<97 ;>J<:>: KA>=8G <6FDK7<6= U8A:896 A>67I<I89A >67 7K6D<6G F?6:9<JK:8A <6E?9H>:<?6 KA8EKD E?9 #%%%]A 86B<9?6H86:>D >AA8AAH86:A >A -?9: ?E 2>6F?KB89 ?I89>:<?6A F?6:<6K8 >67 8RI>67

($F A:K786: ">F;8D %>6;>H F?HID8:87 ;89 :;8A<A >67 78E86787 8>9D@ <6 L_MO &89 U?9N E?FKA87 ?6 J<?E<DH I9?7KF:<?6 >67 =9>Z<6= J@ H<=9>6: C8A:896 $>67I<I89A ?6 "?J89:]A)>6N ">F;8D


CWE Funding by Source 2018/19
Other
1%
EC/Core
10%
Int'l (Cdn$)
11%
SFU Other
10%
Other EC
17%
Other Fed Gov't
0%
Prov Gov't
1%
NSERC
13%
SFU Faculty
37%
Industry
0%

#

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1 April 2018 - 31 March 2019

Scholarships, Fellowships, Grants for Students

Description	Name of person	Notes	Amounts
	#	#	#
		PhD	
H$N#$/55>O:<?A:#/63#	) -V?9#\>A/#	!=#F$-55I#	

Conference Funding

Other Funding

Species at Risk

Human Impact on Birds

Declining Avian Populations

Coast Ecology

NSERC

VII. PUBLICATIONS

' ;<A D<A: 98ED8F:A :;?A8 IKJD<F>:<?6A I9?7KF87 A<6F8 ?K9 D>A: 98I?9: SIKJD<F>:<?6A :;>: U898 k<6 I98AAl ?9 kAKJH<::87l E?9 :;8 D>A: 98I?9: >98 <6FDK787 >67 ;>B8 J886 KI7>:87T C8 F?6:<6K8 :? IKJD<A; >F:<B8D@ 'U? -;0 A:K786:A >67 :;988 ($F A:K786:A AKI89B<A87 J@ %C # E>FKD:@ AKFF8AAEKDD@ 78E86787 :;8<9 :;8A8A (?A: ?E ?K9 IO

! " #$%"#&'()('$ # %(%*+

#

:8J9>:8A >6<H>DA 6:8=9>:<B8 >67 %?HI>9>:<B8)<?D?=@ g`: cLOVP`

+>=D<?G 0 G ") $;89D8@G ' " %??NG - + "@>6 >67 ' 4D?U89 L_M` ';8 F?A:A ?E ND8I:?I>9>V A<:<AH[> A:K7@ ?E H<R87VAI8F<8A A8>J<97 J9887<6= F?D?6<8A)8;>B #F?D 7?<: M_ M_OPQJ8;8F?Q>9@_g_

+>9>HAZ8=<G 1 u G 5 0?6>D7G % 0 49>6F<AG (5 4KRY>=89G C +?@H>66G (&>KG 5 4 &KA>NG (! 5?;6A?6G) .<9F;89G " .6>IIG 1) (>9:<6G # ' (<DD89G 1 ! $F;?86D8G (* 2<V :?KA8N >67 ' 0 C<DD<>HA L_M` $I8F<8AVAI8F<E<F H8>6A >67 U<:;<6VAI8F<8A B>9<>6F8 <6 =DKF?F?9:<F?<7 ;?9H?68A >67 AI8F<>:<?6 9>:8A <6 J<97A 6:8=9>:<B8 >67 %?HI>9>:<B8 )<?DV ?=@ g`: cjPVccj

&866<6G & 1 G % 5 08@G 5)v:@G & + +<DF;9<A:G , 18=>=68KRG ' 0 C<DD<>HA >67 , - 1?B8 L_M` &<=;89 9>:8A ?E I98J9887<6= F?67<:<?6 =><6 I?A<:<B8D@ <HI>F:A FDK:F; A<Z8[ ! H8F;>V 6<A:<F :8A: ?E :;8 F?67<:<?6V 78I86786: <67<B<7K>D ?I:<H<Z>:<?6 H?78D 4K6F: #F?D PL: L_MOVL_L`

&8IIG (G 1 C>98G & B>6 , ?9:G $ ( )8>KF;8A68G 5 (%??I89 >67 0 5 +9886 L_M` -?A:V ED87=<6= AK9B<B>D >67 D?F>D 98F9K<:H86: ?E > 9<I>9<>6 A?6=J<97 <6 ;>J<:>: <6EDK86F87 J@ 98AV 89B?<9 ?I89>:<?6A !B<>6 %?6A #F?D MP: ML 0?<[ M_ gcgMQ!%#V_MMO_VMP_MML IKJD<A;87 5K68 L_M`

&<IE689G 5 (G (+>DJ9><:;G $ 'KFN89G . " $:K7;?DH8G ! 0 0?H>D<NG $ 4 -8>9A?6G ' - +??7G - $ "?AA >67 - &?7KH L_M` 'U? E?9>=8 E<A;8A >A I?:86:<>D F?67K<:A E?9 :;8 B89:<F>D :9>6AE89 ?E H<F9?E<J98A <6 *?9:;8>A:896 ->F<E<F , F8>6 E??7 U8JA #6B -?DD LPO: LMgVLLL

&<IE689G 5 (G # . 1?NG % 5>97<68G . " $:K7;?DH8G ! % 18J8>KG . + C9<=;:G $! '98E9@G (% 098B89 >67 + 5?68A L_M`)8>F;VF>A: 78J9<A AK9B8@A ?6 '9<>6=D8 AD>67G)9<:<A; %?DKHJ<>G %>6>7> <67<F>:8 :;8 :<H<6= ?E >99<B>D ?E L_MM '?;?NK :AK6>H< 78J9<A <6 *?9:; !H89<F> (>9 -?DDK:)KDD MPj: ^_cV^MP

&?I8G 0 0 G (% 098B89G 5))KF;>6>6G (!)<A;?IG + (>:Z >67 (5 4 18H?6 L_M` '9867A <6 :<H<6= ?E AI9<6= H<=9>:<?6 >D?6= :;8 ->F<E<F 4D@U>@ J@ C8A:896 $>67I<I89A >67 0K6D<6A %?67?9 ML_: ^cMV^``

5?;6A:?6V+?6ZwD8ZG " >67 # !J9<D L_M` -987>:<?6 9<AN >67 98A?K9F8 >B><D>J<D<:@ 8RID><6 9??A: D?F>:<?6A ?E C;<HJ98D *Numenius phaeopus* <6 > :9?I<F>D H>6=9?B8 78D:> J<A 7?<: M_ MMMMQ<J< MLjc`

5?68AG ' G 5 . ->99<A;G C ' -8:89A?6G # -)Y?9NA:87:G * !)?67G 1 ')>DD>6F8G 2)?U8AG 5 (&<IE689G & .)K9=8AAG 5 # 0?DD<B89G . 1<67WK<A:G 5 1<67A8@G & (*8B<6AG " " "?J89:V A?6G 5 "?D8::?G 1 C<DA?6G ' 5?@F8 >67 5 &>9B8@ L_M` (>AA<B8 H?9:>D<:@ ?E > ID>6NV :<B?9?KA A8>J<97 <6 98AI?6A8 :? > H>9<68 ;8>:U>B8 +8?I;@A<F>D "8A8>9F; 18::89A ^g: PMOPVPL_L ;::IA[QQ7?< ?9=QM_ M__LQL_Mc+1_cjMj^

.U?6G # G C) #6=D<A;G # 1 C8<A89G $ # 49>6NAG 0 5 &?7N<6A?6G 0) 1>6N >67) . $>6789F?FN L_M` 08D>@87 8==VD>@<6= >67 A;?9:8687 <6FKJ>:<?6 7K9>:<?6 ?E !9F:<FV J9887<6= A;?98J<97A F?<6F<78 U<:; FD<H>:8 F??D<6= #F?D #B?D `: MPPOVMPgM 0?<[M_ M__LQ8F8P PcPP

(>9:<6G 1) G (* 2<:?KA8NG 5 C 0?6>D7G ' 4D?FNG (5 4KRY>=89G C +?@H>66G (&>KG 5 4 &KA>NG (! 5?;6A?6G) .<9F;89G " .6>IIG # ' (<DD89G 1 ! $F;?86D8G ' 0 C<DD<>HA >67 % 0 49>6F<A L_M` /%* F?6A89B>:<?6 A:>:KA 7?8A 6?: I987<F: =DKF?F?9:<F?<7 F?6F86V :9>:<?6A <6 98I:<D8A >67 J<97A 6:8=9>:<B8 >67 %?HI>9>:<B8 )<?D?=@ g`: `__V`MP

(?99>6G $! (G 5 # #DD<?::G 5 C 3?K6=G (1 #6=G *)>AK >67 ' 0 C<DD<>HA L_M` #F?D?=<V F>DD@V98D8B>6: 8RI?AK98 :? H8:;@DH89FK9@ 7K9<6= 8>9D@ 78B8D?IH86: 7?8A 6?: >EE8F: >7KD: I;86?:@I8 <6 Z8J9> E<6F;8A S*Taeniopygia guttata*T #F?:?R<F?D Lc: LgOVLjj

*8DA?6V4D?U89G (5G ' - 4D?U89 >67 ! " "<7D8@ L_M` $8R 7<EE8986F8A <6 :;8 79<B89A ?E 98I9?7KF:<B8 AN8U <6 > F??I89>:<B8 J988789 (?D8F #F?D Lc: L^PgVL^^j ;::IA[QQ7?< ?9=QM_ MMMMQH8F M^g`c

*cus*T %>6 5 u??D Og: ^jPi^cL 7R 7?< ?9=QM_ MMPOQFYZVL_MjV_MjO

#6=G (1 G % !)<A;?IG 0 %9KHIG $ - 5?68AG ' 0 C<DD<>HA >67 . + 09?K<DD>97 L_Mc ';8 F>:J<97 <A :;8 68U F;<FN86[;<=; A86A<:<B<:@ :? > 7<?R<6VD<N8 F?HI?K67 <6 > U<D7D<E8 AI8V F<8A #6B $F< '8F;6?D gM: gLgLVgLg`

#6=G (1 G " 5 18:F;89G ' 0 C<DD<>HA >67 5 # #DD<?:: L_Mc 6 ?B? :9<ASLVJK:?R@8:;@DT I;?AI;>:8 F?6F86:9>:<?6A A<=6<E<F>6:D@ 78F98>A8 <6 D>:8 <6FKJ>:<?6 >E:89 > A<6=D8 8RI?AK98 B<> <6Y8F:<?6G U<:; 6? 8B<786F8 ?E 8EE8F:A ?6 ;>:F;<6= AKFF8AA ?9 D>:86: 8EE8F:A ?6 =9?U:; ?9 98I9?7KF:<?6 <6 Z8J9> E<6F;8A #6B '?R %;8H Pj: `PV``

4?UD89G (! >67 ' 0 C<DD<>HA L_Mc ! I;@A<?D?=<F>D A<=6>:K98 ?E hF?A: ?E 98I9?7KF:<?6h >AA?F<>:87 U<:; I>986:>D F>98 !H89 *>: MO_: cjLVccP

+<JA?6G . 4 >67 ' 0 C<DD<>