Supplemental Information for the Florida Sandhill Crane

Biological Status Review Report

The following pages contain peer reviews received from selected peer reviewers, comments received during the public comment period, and the draft report that was reviewed before the final report was completed

March 31, 2011

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Peer review #1 from Gary Ivey

From: Gary Ivey
To: Imperiled
Subject: RE: Deadline reminder for peer reviews of BSR reports
Date: Tuesday, January 11, 2011 10:32:19 AM

Greetings,

I have carefully reviewed the BSR report for the Florida Sandhill Crane and I find the biological information and data analysis to be complete and accurate. I also find the assumptions, interpretations of the data, and conclusions to be reasonable and justifiable and believe this subspecies should continue its Threatened status in Florida.

Sincerely,

Gary Ivey
Western Crane Conservation Manager
International Crane Foundation

Peer review #2 from Scott Hereford

From: Scott_Hereford@fws.gov
To: Imperiled
Subject: Florida sandhill crane BSR
Date: Monday, January 10, 2011 10:46:38 AM
Attachments: Florida Sandhill Crane Final Draft BSR 11-15.10.docx

I reviewed the draft BSR for the Florida sandhill crane. I concur with the methodology, analysis, and interpretation in the report by the biological review group. I support the finding that the Florida sandhill crane remain a threatened species in the state.

I have included a few comments in the body of the draft BSR using Word review format. There was also a small math error in the criterion table.

Scott G. Hereford, Supervisory Wildlife Biologist
U.S. Fish & Wildlife Service
Mississippi Sandhill Crane National Wildlife Refuge
7200 Crane Lane
Gautier, MS 39553 USA

Biological Status Review for the Florida Sandhill Crane (*Grus canadensis pratensis)*

EXECUTIVE SUMMARY

The Florida Fish and Wildlife Conservation Commission (FWC) directed staff to evaluate all species listed as Threatened or Species of Special Concern as of September 1, 2010. Public information on the status of the Florida sandhill crane was sought from September 17 to November 1, 2010. A three-member biological review group met on November 3 – 4, 2010. Group members were Martin J. Folk (FWC lead), Stephen A. Nesbitt (retired biologist, FWC), and Marilyn G. Spalding (Emeritus Faculty at the University of Florida). In accordance with rule 68A-27.0012 Florida Administrative Code (F.A.C.), the Biological Review Group was charged with evaluating the biological status of the Florida sandhill crane using criteria included in definitions in 68A-27.001(3), F. A. C., and following the protocols in the *Guidelines for Application of the IUCN Red List Criteria at Regional Levels (Version 3.0)* and *Guidelines for Using the IUCN Red List Categories and Criteria (Version 8.1)*. Please visit http://www.myfwc.com/WILDLIFEHABITATS/imperiledSpp_listingprocess.htm to view the listing process rule and the criteria found in the definitions. The Biological Review Group concluded from the biological assessment findings that the Florida sandhill crane met criteria for listing, and FWC staff recommends retaining the species on the FWC list of threatened species.

BIOLOGICAL INFORMATION

Life History References –Kale et al. 1992, Tacha et al. 1992, Stys 1994, Meine and Archibald 1996, Hipes et al. 2001, Seng 2001, Wood and Nesbitt 2001, Florida Fish and Wildlife Conservation Commission 2003, IUCN 2009.

Taxonomic Classification – Florida sandhill cranes (*Grus canadensis pratensis*) belong to the Gruinae subfamily in the family Gruidae. *G. c. pratensis* is one of six recognized subspecies of sandhill crane in North America. Florida sandhill cranes are a resident breeding population in the state.

Population Status and Trend – Nesbitt and Hatchitt (2008) inferred a 2003 statewide population of Florida sandhill cranes at 4,594 individuals, which included 2,152 paired adults. They also inferred, from GIS analysis of habitat, that the population declined 35.7% from 1974-2003. Expand on results of the GIS habitat analysis. Which habitats declined? Throughout range or in key source areas? Hunter et al. (2006) suggested that there were 2,720 breeding pairs of Florida sandhill cranes in peninsular Florida, but the Biological Review Group did not know how that number was derived. Are there any population survey data available? If figures are allowed in this format, it might be useful to include a map depicting habitat decline.

Geographic Range and Distribution – Florida sandhill cranes are non-migratory. They occur throughout peninsular Florida north to the Okefenokee Swamp in southern Georgia, although they are less common at the northernmost and southernmost portions of this range. Florida's Kissimmee and Desoto prairie regions are home to the state's most abundant populations (Meine and Archibald 1996).

Quantitative Analyses – A population viability analysis has not been conducted on the Florida sandhill crane.

BIOLOGICAL STATUS ASSESSMENT

Threats – Degradation or direct loss of habitat due to wetland drainage or conversion of prairie for development or agricultural use are the primary threats facing Florida sandhill cranes. Freshwater marsh? Open water roost? The range of the Florida sandhill crane diminished in the southeastern United States during the 20th century, with breeding populations disappearing from coastal Texas, Alabama, and southern Louisiana (Meine and Archibald 1996). The populations west of Florida may not be considered part of G.c. pratensis. Nesbitt and Hatchitt (2008) documented a continuous loss of suitable crane habitat in Florida over the past several decades, and this is suspected to continue.

A state-wide monitoring program would allow a more informed understanding of the population and allow detection of trends.Good recommendation – you might include examples of a few levels of monitoring effort. Much of our knowledge of Florida sandhill cranes has been based on data collected on private cattle ranches. Survivorship and productivity data (habitat use?) are needed for conservation lands and urban areas to facilitate the management of habitats for Florida sandhill cranes.

Statewide Population Assessment – Findings from the Biological Review Group are included in the Biological Status Review Information tables.

LISTING RECOMMENDATION

Staff recommends that the Florida sandhill crane be listed as a Threatened species list because the species met criteria for listing as described in 68A-27.001(3), F. A. C.

SUMMARY OF THE INDEPENDENT REVIEW

Biological Status Review Information
Findings

Species/taxon: Florida Sandhill Crane
Date: 11/03/10
Assessors: Marty Folk, Steve Nesbitt, Marilyn Spaulding.
Adam Kent as facilitator.
Generation length: 12.5 years (3 generations=37.5 years)

Criterion/Listing Measure	Data/Information	Data Type*	Criterion Met?	References
*Data Types - observed (O), estimated (E), inferred (I), suspected (S), or projected (P). Criterion met - yes (Y) or no (N).				
(A) Population Size Reduction, ANY of				
(a)1. An observed, estimated, inferred or suspected population size reduction of at least 50% over the last 10 years or 3 generations, whichever is longer, where the causes of the reduction are clearly reversible and understood and ceased[1]				
(a)2. An observed, estimated, inferred or suspected population size reduction of at least 30% over the last 10 years or 3 generations, whichever is longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible[1]	Population reduction of 35.7% in 30 years (1973-2003) due to habitat loss and degradation and not projected to stop	I	Y	Nesbitt and Hatchitt 2008
(a)3. A population size reduction of at least 30% projected or suspected to be met within the next 10 years or 3 generations, whichever is longer (up to a maximum of 100 years) [1]				
(a)4. An observed, estimated, inferred, projected or suspected population size reduction of at least 30% over any 10 year or 3 generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased or may not be understood or may not be reversible.[1]				
[1] based on (and specifying) any of the following: (a) direct observation; (b) an index of abundance appropriate to the taxon; (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (d) actual or potential levels of exploitation; (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.				
(B) Geographic Range, EITHER				
(b)1. Extent of occurrence < 20,000 km^2 (7,722 mi^2) OR				
(b)2. Area of occupancy < 2,000 km^2 (772 mi^2)	31,180.9 square km	I	N	Nesbitt and Hatchitt 2008
AND at least 2 of the following:				
a. Severely fragmented or exist in ≤ 10 locations				
b. Continuing decline, observed, inferred or projected in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent, and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals				
c. Extreme fluctuations in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals				
(C) Population Size and Trend				

Population size estimate to number fewer than 10,000 mature individuals AND EITHER	4594 (Nesbitt and Hatchitt) with higher confidence or 5,440 (Hunter et al. 2006) but this source not well-referenced	I	Y	Nesbitt and Hatchitt 2008; Hunter at al. 2006
(c)1. An estimated continuing decline of at least 10% in 10 years or 3 generations, whichever is longer (up to a maximum of 100 years in the future) OR	Difficult to estimate due to uncertainty regarding economic status of the state and associated habitat loss		N	
(c)2. A continuing decline, observed, projected, or inferred in numbers of mature individuals AND at least one of the following:	Continuing decline inferred based on continued habitat loss (unknown rate)	I	Y	
a. Population structure in the form of EITHER	no subpopulations		N	
(i) No subpopulation estimated to contain more than 1000 mature individuals; OR				
(ii) All mature individuals are in one subpopulation	no subpopulations		N	
b. Extreme fluctuations in number of mature individuals			N	
(D) Population Very Small or Restricted, EITHER				
(d)1. Population estimated to number fewer than 1,000 mature individuals; OR			N	Nesbitt and Hatchitt 2008
(d)2. Population with a very restricted area of occupancy (typically less than 20 km^2 [8 mi^2]) or number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a short time period in an uncertain future				
(E) Quantitative Analyses				
e1. Showing the probability of extinction in the wild is at least 10% within 100 years				Quantitative analysis not available

Initial Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets criteria	A2
Is species/taxon endemic to Florida? (Y/N)	N
If Yes, your initial finding is your final finding. Copy the initial finding and reason to the final finding space below. If No, complete the regional assessment sheet and copy the final finding from that sheet to the space below.	
Final Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets criteria for listing	A2

Peer review #3 from Dr. James Lewis

From: jamesl46862@peoplepc.com
To: Imperiled
Subject: Florida Sandhill Species Review
Date: Monday, January 03, 2011 5:41:54 PM

I have reviewed the Draft Biological Status Review for the Florida Sandhill Crane. The three authors are the individuals most knowledgeable about the Florida Sandhill Crane, with over 60 combined years of research and management on the topic. Their publications provide the primary source for information about the subspecies, its ecology, diseases, habitat needs, conservation, and status. Obviously they are the individuals most qualified to accomplish the status review.
(1) The biological information and data analyses in the Biological Status Review are complete and accurate.
(2) The assumptions, interpretations of data, and conclusions are reasonable and justified by the known and inferred population and habitat trends.

Sincerely,

James C. Lewis, Phd

Letters and emails received during the solicitation of information from the public period of September 17, 2010 through November 1, 2010

Email from Diane Erdely

From: Diane Erdely
To: Imperiled
Subject: Imperiled species
Date: Tuesday, October 05, 2010 10:19:24 AM

Hello Gentlemen:

My name is Diane Erdely. I live in the community of Solivita, zip code 34759. We straddle the Polk/Osceola County lines. The community, which will consist of about 600 homes when completed, was built with lots of conservation area, and many retention ponds, some of large size. We also have two golf courses. We are within a few miles of the Nature Conservancy's Disney Wilderness preserve. We see some of the imperiled species here on a regular basis.

Florida Sandhill Crane
Very common here. There are at least five breeding pairs in our development. One pair who has had chicks in the past was not successful this year. Several pair successfully raised 2 chicks this year, and one pair raised 1 chick. Have also seen a pair along Marigold Avenue (Marigold and Pleasant Hill Rd.), and sevearl pair on Pleasant Hill Road between here and Kissimmee. I am sure you have the information on the FSC's in The DWP, as we have helped with the survey there.

Limpkin
Often seen around the lakes here. Breed on the property. Several broods have been seen in the development and just outside. At one point this summer, there was a flock of 10 wandering around the area.

Little Blue Heron
Very common around the lakes in this development. There is a little blue rookery by a small natural pond within the development. They have been very successful for several years, raising easily 20 chicks at a time..standing room only.

Osprey
Seen daily flying over the lakes. Don't know the location of a nest.

Snowy Egret
Common. Seen almost daily around the lakes.

Tricolor Heron
Seen occasionally around the lakes.

White Ibis
Common. Seen daily in small flocks, including immature.

Hope this is helpful to you.

Email from Kurt Snyder

From: Kurt Snyder
To: Imperiled
Subject: Florida Imperiled Species - Living in Port Orange Florida
Date: Tuesday, October 19, 2010 2:04:37 PM

Hello,
I read in the FWC Newsletter about the Biological Status Review being made concerning Florida Imperiled Species. I live in the Cypress Head Golf Course Community in Port Orange, Florida. We have six different species included on the Imperiled Species List that are full time residents here, and one other bird on the list that occasionally has been spotted here. I am not sure if this is the kind of information you are looking for, but if so, let me know and I can provide you with further details.

Here is a list of the 6 species we have at Cypress Head year round:
Florida Sandhill Crane (a dozen or more adult birds, and at least four that were born this spring)
Little Blue Heron (a dozen or more adult birds)
Osprey (two or three adult pairs)
Snowy Egret (5-10 adult birds)
Tricolored Heron (5-10 adult birds)
White Ibis (at least three dozen adult birds and many immature birds born this spring)

Also, for the last three years we have observed one or two Roseate Spoonbills that have stopped for a day or so.

If this information is what you are looking for, I would be happy to provide additional details.

Best regards,

Kurt Snyder

Copy of the Florida Sandhill Crane BSR draft report that was sent out for peer review

Biological Status Review for the Florida Sandhill Crane (*Grus canadensis pratensis)*

EXECUTIVE SUMMARY

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Florida's Kissimmee and Desoto prairie regions are home to the state's most abundant populations (Meine and Archibald 1996).

Quantitative Analyses – A population viability analysis has not been conducted on the Florida sandhill crane.

BIOLOGICAL STATUS ASSESSMENT

Threats – Degradation or direct loss of habitat due to wetland drainage or conversion of prairie for development or agricultural use are the primary threats facing Florida sandhill cranes. The range of the Florida sandhill crane diminished in the southeastern United States during the 20th century, with breeding populations disappearing from coastal Texas, Alabama, and southern Louisiana (Meine and Archibald 1996). Nesbitt and Hatchitt (2008) documented a continuous loss of suitable crane habitat in Florida over the past several decades, and this is suspected to continue.

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Statewide Population Assessment – Findings from the Biological Review Group are included in the Biological Status Review Information tables.

LISTING RECOMMENDATION

Staff recommends that the Florida sandhill crane be listed as a Threatened species list because the species met criteria for listing as described in 68A-27.001(3), F. A. C.

SUMMARY OF THE INDEPENDENT REVIEW

LITERATURE CITED

Florida Fish and Wildlife Conservation Commission. 2003. Florida's breeding bird atlas: A collaborative study of Florida's birdlife. http://myfwc.com/bba/docs/bba_SACR.pdf (Accessed 10/22/2010).

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Seng, W.J. 2001. Cranes. Pages 253 – 255 *in* C. Elphick, J.B. Dunning, Jr. and D.A. Sibley (Eds.). The Sibley Guide to Bird Life and Behavior. Chanticleer Press, Inc. New York.

Stys, B. 1994. Ecology and habitat protection needs of Florida sandhill cranes on areas proposed for land conversion activities. Florida Game and Fresh Water Fish Commission. Nongame Wildlife Program Technical Report No. 14. Tallahassee, FL. 27pp.

Tacha, T.C., S.A. Nesbitt, and P.A. Vohs. 1992. Sandhill Crane (*Grus canadensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/031 (Accessed 10/22/2010).

Wood, D. A. and S. A. Nesbitt. 2001. Sandhill crane. Pages 108-123 *in* D. A. Wood, editor. Florida's fragile wildlife; conservation and management. University Press of Florida, Gainesville, USA.

Biological Status Review Information
Findings

Species/taxon:	Florida Sandhill Crane
Date:	11/03/10
Assessors:	Marty Folk, Steve Nesbitt, Marilyn Spaulding. Adam Kent as facilitator.
Generation length:	12.5 years (3 generations=37.5 years)

Criterion/Listing Measure	Data/Information	Data Type*	Criterion Met?	References
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[1] based on (and specifying) any of the following: (a) direct observation; (b) an index of abundance appropriate to the taxon; (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (d) actual or potential levels of exploitation; (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.				
(B) Geographic Range, EITHER				
(b)1. Extent of occurrence < 20,000 km^2 (7,722 mi^2) OR				
(b)2. Area of occupancy < 2,000 km^2 (772 mi^2)	31,180.9 square km	I	N	Nesbitt and Hatchitt 2008
AND at least 2 of the following:				
a. Severely fragmented or exist in ≤ 10 locations				
b. Continuing decline, observed, inferred or projected in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent, and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals				

c. Extreme fluctuations in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals				
(C) Population Size and Trend				
Population size estimate to number fewer than 10,000 mature individuals AND EITHER	2,152 (Nesbitt and Hatchitt) with higher confidence or 5,440 (Hunter et al. 2006) but this source not well-referenced	I	Y	Nesbitt and Hatchitt 2008; Hunter at al. 2006
(c)1. An estimated continuing decline of at least 10% in 10 years or 3 generations, whichever is longer (up to a maximum of 100 years in the future) OR	Difficult to estimate due to uncertainty regarding economic status of the state and associated habitat loss		N	
(c)2. A continuing decline, observed, projected, or inferred in numbers of mature individuals AND at least one of the following:	Continuing decline inferred based on continued habitat loss (unknown rate)	I	Y	
a. Population structure in the form of EITHER	no subpopulations		N	
(i) No subpopulation estimated to contain more than 1000 mature individuals; OR				
(ii) All mature individuals are in one subpopulation	no subpopulations		N	
b. Extreme fluctuations in number of mature individuals			N	
(D) Population Very Small or Restricted, EITHER				
(d)1. Population estimated to number fewer than 1,000 mature individuals; OR			N	Nesbitt and Hatchitt 2008
(d)2. Population with a very restricted area of occupancy (typically less than 20 km^2 [8 mi^2]) or number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a short time period in an uncertain future				
(E) Quantitative Analyses				
e1. Showing the probability of extinction in the wild is at least 10% within 100 years				Quantitative analysis not available

Initial Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets criteria	A2
Is species/taxon endemic to Florida? (Y/N)	N
If Yes, your initial finding is your final finding. Copy the initial finding and reason to the final finding space below. If No, complete the regional assessment sheet and copy the final finding from that sheet to the space below.	
Final Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets criteria for listing	A2

1	Biological Status Review Information Regional Assessment	Species/taxon: Florida Sandhill Crane
2		Date: 11/3-4/10
3		Assessors: Marty Folk, Steve Nesbitt, Marilyn Spaulding.
4		Adam Kent as facilitator.
5		
6		
7		
8	Initial finding	Supporting Information
9		
10	2a. Is the species/taxon a non-breeding visitor? (Y/N/DK). If 2a is YES, go to line 18. If 2a is NO or DO NOT KNOW, go to line 11.	no
11	2b. Does the Florida population experience any significant immigration of propagules capable of reproducing in Florida? (Y/N/DK). If 2b is YES, go to line 12. If 2b is NO or DO NOT KNOW, go to line 17.	no
12	2c. Is the immigration expected to decrease? (Y/N/DK). If 2c is YES or DO NOT KNOW, go to line 13. If 2c is NO go to line 16.	
13	2d. Is the Florida population a sink? (Y/N/DK). If 2d is YES, go to line 14. If 2d is NO or DO NOT KNOW, go to line 15.	
14	If 2d is YES - Upgrade from initial finding (more imperiled)	
15	If 2d is NO or DO NOT KNOW - No change from initial finding	
16	If 2c is NO or DO NOT KNOW- Downgrade from initial finding (less imperiled)	
17	If 2b is NO or DO NOT KNOW - No change from initial finding	no change
18	2e. Are the conditions outside Florida deteriorating? (Y/N/DK). If 2e is YES or DO NOT KNOW, go to line 24. If 2e is NO go to line 19.	
19	2f. Are the conditions within Florida deteriorating? (Y/N/DK). If 2f is YES or DO NOT KNOW, go to line 23. If 2f is NO, go to line 20.	
20	2g. Can the breeding population rescue the Florida population should it decline? (Y/N/DK). If 2g is YES, go to line 21. If 2g is NO or DO NOT KNOW, go to line 22.	
21	If 2g is YES - Downgrade from initial finding (less imperiled)	
22	If 2g is NO or DO NOT KNOW - No change from initial finding	
23	If 2f is YES or DO NOT KNOW - No change from initial finding	
24	If 2e is YES or DO NOT KNOW - No change from initial finding	
25		
26	Final finding	no change

Additional notes - The generation time for Florida sandhill cranes was based on an estimate of 12.5 years from Rhymer et al. 2001.

Appendix 1. **Brief biographies of the members of the Florida Sandhill Crane Biological Review Group.**

Martin J. Folk has a M.S. in Zoology from Southern Illinois University. He has worked for the Florida Fish and Wildlife Conservation Commission for 19 years, primarily on whooping and sandhill cranes. He oversees research on cranes in Florida and supervises a team of biologists. Marty is a member of the International Whooping Crane Recovery Team and is the newsletter editor for the Whooping Crane Conservation Association.

Stephen A. Nesbitt has a M.S. degree in Wildlife Ecology from Oklahoma State University. He has worked as a professional wildlife biologist since 1963 and from 1974 – 2006 with the Florida Fish and Wildlife Conservation Commission. Nesbitt has published over 120 scientific papers on various species in the field of wildlife ecology and population biology, including 70 papers on sandhill cranes.

Marilyn G. Spalding has a B.A. degree in biology from the University of Miami and a DVM degree from the University of Florida. She is emeritus faculty in the Department of Infectious Disease and Pathology at the University of Florida, specializing on the diseases of wild birds, particularly water birds. She was elected to the Council of the Wildlife Disease Association in 1996. In 1997 she was awarded the C. E. Cornelius Young Investigator Award by the College of Veterinary Medicine at UF. She acts as the consulting veterinarian to the FWC in its efforts to re-introduce the whooping crane to Florida and has published over 70 scientific papers, several review chapters and a book, most dealing with diseases of wild birds.

Appendix 2. Summary of letters and emails received during the solicitation of information from the public period of September 17, 2010 through November 1, 2010.

Email from Kurt Synder (cartruk@earthlink.net, phone 386-760-3493), 10/19/10, resides in Port Orange: Reported year-round- Florida Sandhill Crane (a dozen or more adult birds, and at least four that were born this spring)

Email from Diane Erdely (danerd820@yahoo.com, phone 863-427-4369), 10/5/10, resides in the community of Solivita on Polk/Osceola County line (zip code 34759): Florida Sandhill Crane Very common here. There are at least five breeding pairs in our development. One pair who has had chicks in the past was not successful this year. Several pair successfully raised 2 chicks this year, and one pair raised 1 chick. Have also seen a pair along Marigold Avenue (Marigold and Pleasant Hill Rd.), and sevearl pair on Pleasant Hill Road between here and Kissimmee.

Appendix 3. Information and comments received from independent reviewers.