

Monday Oct 14, 2013

Mark Salvato  
South Florida Ecological Services Office  
1339 20<sup>th</sup> St  
Vero Beach, FL 32960  
Mark\_salvato@fws.org

Re: Proposed Rule for Bartram's Scrub-Hairstreak and Florida Leafwing

To Whom it May Concern,

I have been asked to provide peer-review comment for Florida Leafwing and Bartram's Hairstreak butterflies. These butterflies have been proposed to be listed as Endangered under the US Endangered Species Act.

I am writing in strong concurrence with this recommendation. Below I provide specific comments in response to the proposed rule. As background, I have been actively involved in research related to Fender's blue butterfly, an endangered Oregon butterfly, since 1993. My work focuses on experimental and observational methods to understand rare species and the potential role of conservation interventions with as minimal impact as possible on the rare species and their habitats. As part of this work, I am actively engaged in working with US Fish and Wildlife Service and multiple public agencies and private landowners to engage in conservation and actively restore and recreate degraded habitat.

Based on reading the Proposed Rule, I have the following observations and comments

- Developing appropriate monitoring schemes to understand the population biology and population dynamics of these species will be critical to advancing recovery goals. Unlike butterfly populations in more northern climates that have discrete seasons from which we can estimate yearly population sizes, both of these species are continuous breeders. Surveyors have noted presence of these butterflies in every month of the year. A statistically rigorous and field intensive approach is needed to randomize transect locations (as possible given terrain), systematically survey, and assess detection probabilities throughout the year. Ideally this would be conducted in such a way as to assess possible environmental variables that influence ups and downs in the yearly cycle. Accompanying this would be appropriate efforts to estimate population size given a continuously breeding population.

- As part of the monitoring, it would be helpful to test assumptions about species' dispersal traits. The proposed rule suggests that Florida Leafwing has "broad" dispersal abilities and that Bartram's hairstreak is sedentary. Previous studies have indicated that some butterflies appear to be sedentary only because survey efforts have focused so heavily near the hostplant. Surveys that do not preferentially select hostplant, but instead consider a broader swath for random transects would be helpful. Understanding dispersal will be important for considering how and where to implement experimental disturbance (see below) and for developing longer term conservation plans.
- Do not discount small parcels of habitat. Although extremely small parcels (eg 1/8 ha) of habitat cannot, on their own, support an independent population, a cluster of such patches can make a significant contribution, especially if they located near other larger patches and/or in a location that might contribute to connectivity. In the Proposed Rule, the authors it appears do not consider habitat patches of less than 1 ha in their assessment (p. 49884). Instead, it appears that USFWS considered 78 fragments > 1 ha (65 on private land; 12 on public land; 1 on Big Pine Key), of the 375 fragments remaining. These fragments total 930 ha (190 ha + 180 ha + 560 ha), but the authors note that 1780 ha of habitat remain. It would be very helpful to account for the other 850 ha of potential habitat.
- These smaller (and sometimes much smaller) patches can be important, and sometimes critical, to restoration and recovery. Our work with Fender's blue (e.g. McIntire et al 2007 Journal of Applied Ecology 44: 625-736) highlights the potential importance of small land parcels.
- In a similar vein, it is important to consider the importance of private land and private landowners as contributing to conservation efforts. The Willamette Valley USFWS staff have been very successful in their efforts of private land stewardship through programs such as Safe Harbors. These programs can be thoughtfully developed with individual landowners so that the efforts are seen as contributing the value of the land by the landowner, USFWS and the public, and can be very helpful in public outreach efforts.
- The importance of disturbance is fundamental to achieving conservation goals for these species. Fire was clearly an essential ecosystem process for maintaining pine rocklands. In the absence of largescale fire, efforts should be made to investigate other conservation strategies, such as mechanical clearing. Because the effectiveness of such methods is unknown, it will be critical for these methods to be designed and implemented using an appropriate experimental design so that USFWS understand the mechanism by which a conservation strategy does (or does not) work and can actively modify the strategy is the model of statistically and experimentally rigorous active adaptive management. As part of this strategy, the question of

experimental scale relative to possible habitat and what can be learned (relative to species' biology) should be carefully considered.

- I concur that habitat loss, climate change, lack of fire disturbance and mosquito control are all significant threats to these populations. All of these will continue to impact these butterflies without listed and concerted effort to reduce the threats. Pesticide impacts from drift and residual effects if of significant concern. Developing pesticide management strategies that reduce risk to environmental and public health due to chemical exposure and address public health concerns about mosquitos are a valuable asset to further recovery of this and other wildlife species. Research in this area should be heavily encouraged.

Regards,

A handwritten signature in black ink, appearing to read "Cheryl Schultz". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Dr. Cheryl Schultz  
Associate Professor, School of Biological Sciences