

Public Comments Processing
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These two species have different ecological features, with the Florida leafwing flying rapidly over a wider area and being hard to capture with a net, while the Bartram's scrub-hairstreak usually restricts its flight to smaller ranges near a croton plant. As stated on the proposed rule text, all known mainland populations of the Florida leafwing and Bartram's scrub-hairstreak occur on publicly or privately owned lands that are managed for conservation. While the Florida leafwing is now restricted to small pockets of pine rockland, having not been recorded in several locations where it previously occurred, the Bartram's scrub-hairstreak occurs more broadly in currently protected areas. The fact that they share the same habitat and larval food plant (host plant) is of importance not only for the listing but for their future recovery, if it is going to happen.

Calhoun wrote a very comprehensive review of various aspects of the taxonomy and other considerations of these species, and I will not add much to those. However, he questions their recovery under the Act; I will therefore focus a little on the latter.

When a species is listed and its critical habitat designated, recovery plans must be designed and implemented in order to fulfill the goal of listing a species under the Endangered Species Act – to ultimately recover the species to numbers that will allow it to be delisted, not needing the protective measures of the Act. The recovery plan should identify actions to stop, minimize, or reverse the threats that led to its present threatened state. While for many species this is not feasible, and a small percentage of recovery plans have actually achieved such goal, without the recovery plans there is no point in listing a species – it would be the equivalent of giving it a comfortable death.

In the case of these species, the inherent population threats (as stated) will continue at the current level, or get worse. Land use change and habitat loss, fragmentation, and degradation and associated pressures from increased human population are major threats; these threats and also climate change will keep negatively affecting both species if no action is taken, since a reversal of the degraded and developed lands to their original state is practically impossible, and mitigation actions toward the latter is unlikely (at least in the near future).

I have more knowledge of Florida leafwings, and do not know much about the Bartram's scrub-hairstreak, so **my comments apply to the Florida leafwing recovery**. Hopefully other reviewer will address the Bartram's scrub-hairstreak recovery properly.

Because immature mortality rates of the Florida leafwing are historically, ecologically high, recovery efforts must address the permanency and reproduction of adults. Another point to highlight is that the interactions with parasitoids are well established, and because many of the parasitoids that attack this species are generalists, a smaller or larger population of Florida leafwing will likely not lead to changes in parasitism rates, because when in low numbers, other species serve as nurseries for them. Parasitism in immature stages of this species is hard to reduce, reinforcing my point about focusing recovery on adult strengthening.

While, as mentioned, we cannot reverse the land use pattern that led to degradation of habitat for this species, some of the disturbance around the area might be useful. Florida leafwing adults use excrement and rotten fruit as nutritional resources, and therefore their availability would be advantageous. It might be useful to address the availability of those resources in the recovery plans – animal manure from agricultural operations, fruit waste from fruit products manufacturing plants, etc. might be brought into the protected areas regularly to serve as added resources for the adults, which could potentially lead to healthier, stronger, adults who might improve reproduction rates. This suggestion is based on the observation that current numbers are not enough to support or increase the populations of this species, or to facilitate its dispersal to the other protected areas where it currently is not found anymore. This leads me to the next point in the recovery plan.

A hard target number for population viability would be hard to determine for the Florida leafwing, especially with all the unknown factors that can affect these butterflies (hurricanes, strong storms, etc), but aiming for more is of course better. Reintroduction of adults to the areas where it does not occur anymore, while providing the added resources, would be a good (if not essential) strategy to try to re-colonize said areas while reducing isolation and hopefully increasing genetic diversity. As mentioned before, relying on the species to re-colonize such areas on its own might be not a successful strategy.

Last but not least, I failed to find text relating specifically to the Florida leafwing listing. The text exists for the Bartram's scrub-hairstreak, and reads: "Therefore, on the basis of the best available scientific and commercial information, we propose listing the Bartram's scrub-hairstreak butterfly as endangered in accordance with sections 3(6) and 4(a)(1) of the Act. We find that a threatened species status is not appropriate for the Bartram's scrub hairstreak butterfly because of the severity and immediacy of the threats, its restricted range (93 percent loss), threats are occurring range wide and are not localized, its five small populations, and because the threats are ongoing and expected to continue into the future." No such (or similar) text was found for the Florida leafwing. Maybe I just missed it.