

# “Monarch Rescue”: A Good Idea?

by Alan Macnaughton (amacnaug@uwaterloo.ca)

Toronto Entomologists' Association Ontario Insects Newsletter January 2019

Reproduced by permission of the TEA

Google “monarch rescue” and you will see that many people, and not necessarily entomology hobbyists, are harvesting monarch eggs and larvae and rearing them to release as adults. But while many people see this as obviously beneficial, monarch scientists raise concerns with some activity carried on under this banner. Much depends on what is meant by “monarch rescue,” as described below.

Whatever rearing we do, we should be doing it well. We can follow best practices in rearing to reduce the possibility of disease, since it may be bad for the population to release monarchs which are unhealthy. The websites of the Xerces Society ([xerces.org](http://xerces.org)) and Monarch Joint Venture ([monarchjointventure.org](http://monarchjointventure.org)) have a number of specific suggestions:

- Collect immature monarchs locally from the wild (as opposed to rearing multiple generations), heeding collection policies on public lands; never buy or ship monarchs.
- Raise monarchs individually (i.e., one per container). This is something that is not usually done.
- Keep rearing containers clean between individuals by using a 20% bleach solution to avoid spreading diseases or mold.
- Avoid using the same containers over and over again, as this can allow parasites and pathogens to accumulate over time.
- Provide sufficient milkweed including adding fresh milkweed daily.
- Rearing containers need to be cleaned of frass and old milkweed daily to prevent mold growth.

- Keep rearing containers out of direct sunlight and provide a moist (not wet) paper towel or sponge to provide sufficient, not excessive, moisture.
- Handle larvae as little as possible to avoid hurting them or spreading disease.
- Caterpillars that stop moving and turn brown or black should be removed immediately; they could rupture and spread infection.
- To reduce the risk of spreading the protozoan parasite OE, do not keep adults in the same container as immatures, and do not allow adults to emerge in a container in which larvae are feeding. The issue is that adult monarchs can spread dormant parasite spores to milkweed plants, which spread to caterpillars when they eat the plants.
- Test newly-emerged adults for OE. Project Monarch Health ([monarchparasites.org](http://monarchparasites.org)) suggests that even if you believe that your monarchs are infected, they can be released as long as they reflect the natural disease prevalence and are healthy enough to fly.



- Release monarchs where they were collected and at appropriate times of year for your area.
- Contribute to citizen-science projects regarding your rearing activity, e.g., Project Monarch Health and the Monarch Larva Monitoring Project (mlmp.org).

Although the two websites cited above do not mention this, consider outdoor rearing: a bag constructed of netting can be placed over the individual plant, or a whole netted enclosure can be created. The concern is that indoor-reared monarchs may not be in reproductive diapause, and hence will not be ready for the migration (monarch scientist Andy Davis, Sept. 11, 2018: [akdavis6.wixsite.com/monarchscience/blog](http://akdavis6.wixsite.com/monarchscience/blog)).

### The Problems of Mass Rearing

The difficult question is whether it is a good idea to capture eggs and larvae in the wild, raise them indoors, and release the adults, for more than just fun and education: the goal for many people is to increase the population. This is “monarch rescue.”

One way to do this is to involve a lot of people: proselytize and involve your friends and neighbours in raising monarchs. But this is not easy, and so people think of the other alternative: raising monarchs at scale. Some people raise and release hundreds or thousands of monarchs.

The consensus view of monarch researchers on this practice is expressed in two documents: a joint statement from 2015 from ten monarch researchers, “Captive Breeding and Releasing Monarchs,” which is available on the website of the Monarch Lab ([monarchlab.org](http://monarchlab.org)); and (2) “Raising Monarchs: Why or Why Not?”, a statement of September 2018 by Monarch Joint Venture, a partnership of organizations such as Monarch Watch, the North American Butterfly Association (NABA), and government agencies. The first statement provides more detail and so is discussed more here, but the other document comes to similar conclusions.

The joint statement sees nothing wrong with “small scale” (which is not defined) activities, but expresses concern with “releasing commercially produced and continuously mass-reared [i.e., multiple generations from the same breeding stock] individuals,” such as might occur at “weddings, funerals and other celebrations” or through sales to schools. The view is that such an activity is unlikely to benefit monarchs, and could actually hurt them. The authors acknowledge that the impact of releasing commercially-bred monarchs into the environment has not been well-studied, so some speculation is involved. Three potential problems are identified:

The first problem is negative effects of mass rearing conditions. Rearing tends to involve more crowding than natural conditions. Further, there are no requirements that commercial breeders and others follow specific disease-prevention protocols, nor are there agencies that routinely test captive stock for diseases. In their rearing for scientific research, the authors “house [monarchs] singly or in low densities in hospital-like sterile conditions, and shut down our rearing practices annually for deep cleaning,” but they still have trouble keeping pathogens in check, and periodically experience disease outbreaks. In addition, some studies have found that reared monarchs were significantly smaller and less likely to be rediscovered in their Mexican overwintering grounds than their wild counterparts. Although this discussion is in the context of commercial rearing, individuals raising at large scale would need to be concerned with these issues as well.

The second problem is genetic consequences. This relates specifically to continuously rearing multiple generations, which would be done commercially but is unlikely to be done by individuals (who capture new wild stock each year). Studies of fruit flies and other species show that animals can genetically adapt to captive conditions in as little as one or two generations, which can reduce their survival rate when later released in the wild. There can also be a lack of genetic diversity if the commercial livestock is not refreshed with wild stock. Richard Frankham (Molecular Ecology, 2007) reviews evidence that problems like this occur when individuals raised through captive-breeding programs for species restoration are returned to the wild.

The third problem is negative effects on scientific research. This can occur if captive-reared monarchs are released in places and times when they are rare or not naturally present, and then they are seen in the wild and thought to represent natural occurrences. Releasing monarchs in Ontario in April would be an example of this. It would seem unlikely that individuals rearing monarchs would do this (except perhaps for late releases in the fall). It is more likely to occur with releases at weddings, funerals, etc.

The Monarch Joint Venture statement of September 2018 is much shorter and less specific, but it is similar in tone. Its key point is the following risk-benefit calculation: “There is a lack of scientific evidence that monarch rearing actually results in overall population increases, and it is known to carry risks.” Having said that, the statement says positive things about raising monarch responsibly: “There is little risk in responsibly [i.e., using best practices, as discussed above] raising a few monarchs for enjoyment, education or citizen science, which can lead to stronger human connections and better understanding of this amazing species.”

### The Xerces Society Position

The Xerces Society is an organization for the conservation of invertebrates, founded in 1971. While a representative of the organization was a signatory of the 2015 joint statement, its position now appears to have changed: either it is now more negative on captive rearing, or it has simply chosen to express its views in a more strident fashion. In September 2018, almost coincident with the release of the Monarch Joint Venture statement, the Xerces Society released a report by Emma Pelton entitled “Keep Monarchs Wild!” While the 2015 joint statement focussed on commercial breeding, the Xerces report focussed on activities by individuals. Here is their introductory comment:

In recent years, a second issue regarding rearing has emerged. In an attempt boost the population people are turning to large-scale captive rearing of wild-collected monarchs. Captive rearing is the practice of collecting eggs, caterpillars, or pupae (chrysalises) from the wild, raising them in captivity, and then releasing them. In recent years and months, we have received more and more reports of individuals and groups who are focused on collecting eggs and caterpillars from the wild, rearing them in their homes, and then releasing them. Newcomers to rearing find encouragement on online platforms and networks of people who are also rearing. With this support, it can understandably start to sound like a great idea to raise more and more “cats.” The practice has now become so commonplace in some circles, however, that hundreds or even thousands of monarchs are reared and released by a single individual each year. Many individuals with good intentions adopt this practice under the assumption that they are helping monarchs by lowering the butterfly’s notoriously high predation and parasitism rates found in the wild, where less than 10% of eggs make it to adulthood.



By that logic, the more monarchs they rear, the more monarchs will make it to Mexico or California come winter. On the surface, this sounds like a good thing, but if you dig a little deeper, you'll see this practice does not match up with what we know about how to actually reverse the monarch's decline. There are no studies or other compelling evidence that show that releasing captive reared monarchs boosts the population. And if, at the heart of it, we are really trying to help monarchs, then we need to carefully examine the risks of captive rearing.

The report goes on to discuss the problems noted above, but it has little to add beyond what is in the joint statement. The contribution is more in the rhetoric and tone. Here is the summary statement:

Arguably, the problem may not be that we have too few monarchs, but rather that the monarchs that are still wild don't have enough of what they need. They don't have enough breeding habitat (milkweed and nectar plants); they don't have enough areas safe from pesticides; they don't have enough intact overwintering habitat; they don't have enough protection from severe storms and drought due to climate change; etc.

Instead of rearing—which is risky and unproven in helping monarchs—we should focus on more effective ways to conserve these glorious wild animals. Our tactics should address the reasons the species is in trouble to begin with. We can do this through taking action to protect natural habitat; to plant native milkweed and flowers; avoid pesticides; support wildlife-friendly, local, and organic agriculture; contribute to research efforts via citizen science; and organize ourselves to push for policy changes. These are more effective ways to expend our energies in monarch conservation than trying to rear the population back to health—which we do not know is possible and may spell trouble for an already at-risk species. For more information about ways to help monarchs, check out resources on the websites of the Xerces Society and the Monarch Joint Venture.

You should feel welcome to raise a caterpillar or two to teach your family about monarchs or to report to a citizen science project, but put the rest of your efforts into some other action to help monarchs. Let's work together to ensure that rearing monarchs does not unintentionally harm this iconic species we are all trying to protect!

The report concludes with the following specific recommendation on numbers: "Rear no more than ten monarchs per year (whether by a single individual or family). This is the same number recommended in the original petition to list the monarch under the Federal [US] Endangered Species Act." The only other expression of views I saw that mentioned a specific number is Andy Davis' blog post cited above, which suggested a limit of 100.

Clearly, there is a difference in point of view on citizens' involvement in monarch rearing. We need more research on both the benefits and the risks. The evidence is sparse about the benefits, but perhaps also sparse about the risks. Also, of the three problems noted by the 2015 joint statement, only the first problem – negative effects of mass rearing conditions would appear to apply to single-season (not multi-year rearing) efforts. Perhaps people involved in such work will do their best to follow the best practices noted above, and thus minimize the risk.



## Other Actions

What else can we do?

The key message is habitat, habitat, habitat – we need more. This can be through our personal efforts in our gardens -- plant milkweed. Or we can encourage the planting of milkweed in public spaces, as Butterfly Gardens of Saugeen Shores (led by TEA members Kerry Jarvis and Melitta Smole) have done – see [butterflygardensofss.ca](http://butterflygardensofss.ca). Environment Canada’s Habitat Stewardship program, may provide funding since the monarch is a species of special concern in the federal government’s species-at-risk classification. WWF-Canada also offers grants for local species conservation efforts. A side benefit is that any effort we make in improving monarch habitat will benefit other species as well.

Or we can act at an international level to coordinate efforts in Canada, the US and Mexico, as has been done by TEAs member Don Davis (Monarch Butterfly Fund: [monarchconservation.org](http://monarchconservation.org)) and Darlene Burgess (Butterflies & Their People: [butterfliesandtheirpeople.org](http://butterfliesandtheirpeople.org)).

Or we can do public speaking about the monarch decline, as Carol Pasternak and other TEA members have done. This past fall, TEA teen member Jeff Grant received an award from the Grand River Conservation Authority for, in part, public education work on monarchs.

We can also lobby to change laws, perhaps to create more park or non-agricultural habitat, or to alter or reduce pesticide use to mitigate side-effect damage to monarch populations.

## Ontario Law

Note: Ontario law requires that a Ontario government permit is required to raise more than one monarch butterfly (see the “Endangered Species” page on the TEA website). The TEA has a group permit for this, but you have to register with me ([amacnaug@uwaterloo.ca](mailto:amacnaug@uwaterloo.ca)) in order to be covered by the permit. In 2018, 39 people covered by the TEA permit raised and released a total of about 2,200 monarch butterflies. The limit under the permit is 100 per person. Sale and purchase activities are not allowed.

