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LIVING

Of Monarchs and Mexico

Monarchs use sun as a compass to find their way down south

Who would ever expect that monarch butterflies and AR-15 automatic rifles are now being talked about in the same breath? I guess nothing should surprise us anymore in the ever-growing conflict between human need and greed and environmental protection. An arsenal of modern weapons and technologies, along with ecotourism and special compensation funds, are all part of the plan to try to provide long-term protection to the millions of monarchs that winter in central Mexico each



OUR CHANGING SEASONS
Drew Monkman

winter.

Unlike the generations of monarchs born in early through mid-summer, those that hatch late in the season do not remain near their birthplace to feed and mate. Instead, they almost immediately start to migrate.

Flying at heights of over three kilometers, they cover about 130 kilometres a day at speeds averaging 20 km/h.

Since none of the monarchs heading south in the fall have ever made the trip before, the obvious question is how do they ever find their way?

We now know at least part of the answer. A brilliant set of experiments carried out by researchers at Queen's University established that the butterflies use a "time-compensated sun compass".

In other words, they orient themselves in relation to the sun and possess an internal clock that serves to adjust their bearing as the sun changes position over the course of the day.

The experiments involved using tethered monarchs that were housed in a flight simulator and exposed to the autumn light-dark cycle.

Using air blown up from the floor to simulate a lofting breeze, the monarchs immediately oriented themselves to the southwest and on a due course for their Mexican wintering grounds.

All of the monarchs born east of the Rocky Mountains spend the winter in the same part of central Mexico, namely a few small mountain peaks located near the town of Zitacuaro in Michoacan province, about 160 kilometres west of Mexico City. For butterflies coming from the Kawarthas, this means a flight of about 3700 kilometres, the distance between Montreal and Vancouver!

The nine winter colonies consist of small forest groves, all located within a 50 km by 120 km area.

Some are only the size of a baseball diamond while others are closer to the area of a city block.

For many years, deforestation brought on by logging has been thinning these forests.

Therefore, in 1986, the Mexican government created the Monarch Butterfly Special Biosphere Reserve.

It consists of five hilltops on which monarchs spend the winter.

Two of the sites are open to the public, while the three others are strictly nature reserves.

In recent years, the number of monarchs arriving at the colonies



Don Davis, Special to The Examiner
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has fluctuated widely. Last year, for example, only about 22 million showed up, down from 112 million the year before.

When this year's annual census is completed sometime in early 2006, the population is expected to be close to 100 million. Most of the monarchs arrive at the colonies in November.

It is in these mountains that the butterflies find their favorite tree, the oyamel fir. Its needle-like leaves are the perfect match for the monarch's legs to cling to. Secondly, the temperature is cool but not freezing. The thermometer usually remains below 12 C which makes it too cold to fly.

And, because the monarchs remain inactive most of the time, this allows them to save their precious fat reserves.

They will need these reserves later in the winter when they mate and begin flying north.

The forest trees serve as a buffer against snow, rain, cold and wind, all of which could be potentially fatal.

They also help to maintain high moisture levels in the air, thereby preventing the butterflies from drying out as a result of moisture loss.

It is not surprising that tourists from all over the world come to visit the reserve. The spectacle can be awe-inspiring.

At the height of the season, there can be so many butterflies clinging

to the trees that parts of the forest literally turn a dull orange.

The monarchs swarm together on the trunk and branches of almost every tree, their combined weight sometimes breaking branches.

They also litter the ground. When the butterflies fly about on warm days, the forest comes alive with a symphony of gently flapping wings.

Starting late in February, when the lengthening days have triggered the final development of their reproductive systems, reproductive passion gets the better of the monarchs. Over several weeks, the males zealously court the females. Most of the males die shortly after mating. Then, usually in late March, the female monarchs begin to stream northward, seeking out milkweeds on which to lay their eggs.

They fan out across northern Mexico, Texas and Louisiana. After they deposit their last eggs, the female dies, having lived an extraordinary life — especially for an insect! The next generation continues the migration northward. It is believed to be the offspring of this generation that arrive back in the Kawarthas in June.

Unfortunately, all is not well in the so-called protected areas.

The illegal logging situation has become very serious.

Even foreign tourists often comment on the sound of chain saws

right in the reserve.

Much of the logging is done at night by locals, simply trying to make enough money to survive.

However, because of the large sums of money that can be made, there are also large gangs of armed loggers, many of who have ties to organized crime.

They operate in large groups and, up until recently, have easily overcome local police forces in their attempts to stop them.

Hopefully, all of this is about to change. Mexican authorities hope to have more than 100 enforcement officers on the job by the middle of 2006, supported by volunteer patrols.

They are being equipped with ATVs, firearms, video cameras and special coded radios in an effort to help find and arrest loggers in the rugged terrain. However, because of Mexico's notoriously weak judicial system and widespread corruption, there's no guarantee that arresting people will make any difference.

As in many places in the world, the problem lies in finding a balance between protecting the monarchs but still providing for the impoverished people who have shared the hillsides with them for generations.

When the reserve was first created, nearly 10,000 villagers were asked to give up logging in exchange for jobs in tourism and a special multi-million compensation

fund. This has had some success but their still aren't enough tourist jobs to go around, and many people claim they are not receiving any money from the fund.

People also complain that, as of yet, there are still not enough tourists coming. In the meantime, the Mexican government is trying to create jobs in areas such as reforestation, trail maintenance and trout farming during the off-season.

So, if you've ever dreamed of monarchs in their winter home, this might be the year to go. Not only will you be helping the local economy — and thereby helping to protect the butterflies themselves — but the monarch viewing should be excellent this winter.

What to watch for this week:

Good numbers of pine grosbeaks and bohemian waxwings have arrived in the Kawarthas this winter. Watch for grosbeaks especially on ornamental crabapple trees and European mountain ash.

Bohemian waxwings also like these two tree species as well as European buckthorn.

Large flocks of waxwings have been seen in recent days along the Lakefield highway near Horlings Garden Centre.

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