

## Global water concerns shared by Bow River basin

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As Canadian chair of the United Nations Water for Life Decade, Canmore resident Bob Sandford has spent the past three years learning from the world's leading experts in water policy and water resource management.

But after participating in the sixth biennial Rosenberg International Forum on Water Policy, an invitation-only gathering of water scholars and senior water managers which took place in Zaragoza, Spain June 24 through 27, Sandford admitted this year's topic, Water for Food: Quantity and Quality in a Changing World, left him with plenty to chew on.

As part of the 2008 World's Faire Expo, also taking place in Zaragoza, the forum welcomed presentations and speakers from around the world, including Canadian Margaret Catley-Carlson, chair of the Stockholm-based Global Water Partnership.

But it was the presentation by Uriel Safriel, Hebrew University of Jerusalem professor from the department of evolution systematics and ecology, that gave everyone in attendance cause to think.

"Attending this and previous Rosenberg forums has really made me highly aware of the challenges we're going to face in this basin," Sandford said. "I came away this time with the realization that what emerged more strongly and more articulately than at any other forum - our water needs have become so great that over large parts of the world we have begun to deny nature the water it needs to perpetuate biodiversity-based ecosystem processes that are every bit as important to our survival in the long-term as our immediate needs are in the short term."

At the forum, Sandford said, participants were presented the first really solid science that demonstrated one-third of humanity is now competing with nature for water, and that natural systems are in decline because they don't have the water they need to function as they have in the past.

"In the entire Mediterranean eco-zone there is not enough water left to sustain eco-systems other than agriculture," Sandford said. "When you deny water to nature, you reduce its capacity to supply and purify and regulate water as part of the natural cycle. And you reduce natural capacity to moderate climate change impacts. Where there are greater populations, there is greater impact. This kind of agriculture is not sustainable. Water scarcity will become such a serious problem that water re-use will become more and more in demand, and water re-use comes with problems of contamination."

Safriel's presentation, Sandford said, was supported by U.S. scientists and by Sweden's Malin Falkenmark, the world's leading expert on the relationship between eco-systems and water production.

"Suddenly nature is a bona-fide equal customer for water, and we've never thought about it that way before," Sandford said.

In southern Alberta, as soon as one travels downstream on the Bow River south of Canmore, 70 per cent of available water is being used for agriculture.

"Here we have over-allocated our own rivers for human use without considering nature's needs," Sandford said. "All the water we can see downstream from Canmore is allocated to agriculture."

For solutions to this problem, Sandford suggested Alberta and Canada on the whole would have to begin taking some lessons from Spain and Australia.

"We have to govern our way through this, and decide on the choices we can make to resolve conflicts. We have to take a lesson from Australia, where already climate change impacts have made it impossible to operate as they have in the past. Australia may be the first place in the world to experience a permanent reduction in water availability over large regions because of climate change."

The second place in the world facing similar circumstances is the southwestern U.S., he said. And at this point in time, the Bow River basin is where Spain was 20 years ago, while Australia is where we might be 20 years from now.

"If that's the case, we can expect those same impacts to radiate outward and northward from that region to affect climate variability of Canada's southern plains. We need to learn what those nations have done in those circumstances and we need to anticipate those changes and react to them."

On a global scale however, the problem is likely to only grow as populations and demands continue to grow.

"To meet the projected food production needs of the human population in 2050, we will need to capture and use the equivalent of all the surface water on earth," Sandford said. "That, of course, would deny nature any water. Water productivity in agriculture has to improve if we're going to have any hope of meeting food production demands in 15 years, let alone in 2050."

While here in southern Alberta we've only just discovered we're at the limits of our water supply, many of the challenges that lie in the path of convincing populations and governments to take heed of a worsening situation are universal; people share an unwillingness to change their habits; they are reliant on existing rights, privileges and political influences; there is considerable investment in existing legislation; and on the whole, people don't necessarily take nature's need for water seriously, nor do we as a species take seriously the possibility that climate change could really change things.

"Despite the fact we're doing many things better globally, the entire biofuel direction indicates with what enthusiasm we can pursue the wrong thing," Sandford said.

The solution lies in taking action, he said, including recognizing sooner or later that nature will have to be served with the water it needs just as people are, and that in the Bow Valley people will have to be mindful of the dangers of over-building in the region's headwaters. Whether those houses are occupied on a full-time basis or not, paving over significant areas of upland watershed can significantly decrease downstream water availability in the long-term.

"It may be unwise to expect that we will always have the volumes of water that are presently available to us annually presented as a gift or natural processes," Sandford said. "Over time, climate change could very well reduce the amount of water this region naturally generates, and that we have already allocated what exists now may well lead to conflict over who gets how much water for what purpose. And if we want to continue to dine off the extraordinary menu to which we have become accustomed, we need to proactively manage all of the influences within our control to ensure both natural ecosystem health and careful water stewardship."