Wildlife Toxicology Working Group Newsletter

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From the Chair

Brian Hiller
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Greetings and Happy Autumn! I hope this newsletter finds you all enjoying a bit of time outdoors during the changing of the seasons. As change is the theme of autumn it seems appropriate that I begin by congratulating and welcoming the newly elected board members of the WTWG.

I would like to start my introduction by sending out some thanks to Chair-elect Louise Venne for searching out members willing to run for office. Thanks also to all of those who took the time to vote in the elections and especially to all of the folks who volunteered to run for office. Without dedicated members who volunteer to help run the group, we will cease to exist.

Congratulations to the new officers!
Chair-elect: Kristin Falcone
Vice Chair: Carrie Marr
Secretary: Andrea Erichsen

The next order of business is the Lead Position Statement. I have heard from a number of members with suggestions about how to bring the statement up-to-date and have been working to organize them into the revised document. The board members have assisted me by searching for new regulations in each state so we can stay abreast of new information and regulations on Pb as they emerge. I am planning to submit a revised version to the board for comments in early November before sending the updates to TWS national by Thanksgiving. Thanks to those who took the time to make suggestions for updates, your efforts are appreciated!

The WTWG board has continued to work toward increasing our group's presence and activity on social media and volunteering to represent the group on the Editorial Advisory Board of "The Wildlife Professional" magazine. On the social media front, Stephanie Baker has continued to manage/update posts for our Facebook page. The page has a total of 44 likes and regular posts have resulted in a few new people liking the page each week. If you haven't gone to the page and checked it out, click here WTWG FB page. The group is also now on Twitter and will be posting wildlife and environmental toxicology-related information and articles via the

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following handle @TWSWildlifeTox. We currently have only three followers, but I will be keeping track of news items and relevant scientific journal articles and Tweeting them out a bit more regularly going forward. Past-Chair, Dr. Jeff Levengood, volunteered to serve on the Editorial Advisory Board of the Wildlife Professional magazine. However, our group was not selected to have representation on the board for this two-year term. Jeff has offered to remain as the point of contact for the group leading into the next round of selections. Thanks to Jeff for volunteering for this role and his willingness to continue to work for a higher profile for the WTWG within TWS on a national level.

Wildlife toxicology has been in the news again in the form of a theme issue in Philosophical Transactions of The Royal Society "Assessing risks and impacts of pharmaceuticals in the environment on wildlife and ecosystems" (link here). There are articles showing up in the popular media every day and the remainder of the group should feel free to email any articles they find to me or one of the other board members so that we can share it with the rest of the membership. This is a great way to keep in touch with everyone else and to keep everyone updated on happenings in the field.

I also have an update on the progress of TWS MN chapter and the "deer hunter" workshops that were proposed this past spring. The group is very dedicated to this topic and they have organized three opportunities for the general public to come to a "field day" where they can test lead and non-toxic ammo in their own firearm and see the difference in post-impact bullet fragmentation. These were well covered by various media outlets around the state including the Outdoor News, StarTribune in Minneapolis (link here), and the International Falls Journal (link here). These workshops and the subsequent media coverage have raised the profile of this issue, and the WTWG, here in MN and generated quite a bit of discussion among hunters as well. This is yet another reason to update the Lead Position Statement as it is the reference document for most state and regional chapters on this issue.

Finally, I'd like to conclude by thanking the members of the board for their help this year and the rest of the membership for allowing me to help further the cause of this working group by serving as Chair. It has been a pleasure and a privilege. I would also ask the membership of the WTWG to continue to keep in touch between newsletters. We can do so by passing along any toxicology-related issue in your local, national, or an international newspaper, send the link or a quick email to the Chair, one of the other board members, or to me and we'll get it out to the rest of the group. Check out our Facebook page and follow us on Twitter. Given the recent prominence of toxicology-related issues in the news, I have renewed confidence that our group will continue to serve as an important resource for the rest of The Wildlife Society.

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Externship, Cape Wildlife Center, Massachusetts, USA

Cape Wildlife Center, a program of The HSUS in partnership with the Fund for Animals, is a non-profit wildlife rescue and rehabilitation facility that specializes in native species. CWC offers externships for graduate veterinarians and veterinary students, as well as students of biology, ecology, conservation and pre-veterinary medicine. A full-time commitment of a month or longer is required.

CWC externships offer experience in triage, anesthesia, surgery, and treatment of a variety of species, as well as the essentials of wildlife handling, recovery, rehabilitation, and release. It is suited for those considering careers in wildlife, zoo and/or exotic animal medicine, as well as conservation medicine, conservation biology or wildlife rehabilitation. For those interested in the impact and treatment of wildlife with xenobiotic and heavy metal issues, CWC also admits a range of species exposed to lead and rodenticides.

For more information go to http://www.humanesociety.org/about/employment/internships/extern-wildlife-cwc.html
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Member Publications

Lazarus, RS, BA Rattner, BW Brooks, B Du, PC McGowan, VS Blazer and MA Ottinger. *In press.* Exposure and food web transfer of pharmaceuticals in ospreys (*Pandion haliaetus*): predictive model and empirical data. Integrated Environmental Assessment and Management. DOI 10.1002/ieam.1570

Abstract: The osprey (*Pandion haliaetus*) is a well-known sentinel of environmental contamination, yet no studies have traced pharmaceuticals through the water-fish-osprey food web. A screening-level exposure assessment was used to evaluate the bioaccumulation potential of 113 pharmaceuticals and metabolites, and an artificial sweetener in this food web. Hypothetical concentrations in water reflecting "wastewater effluent dominated" or "dilution dominated" scenarios were combined with pH-specific bioconcentration factors (BCFs) to predict uptake in fish. Residues in fish and osprey food intake rate were used to calculate the daily intake (DI) of compounds by an adult female osprey. Fourteen pharmaceuticals and a drug metabolite with a BCF > 100 and a DI >20 μg/kg were identified as being most likely to exceed the adult human therapeutic dose (HTD). These 15 compounds were also evaluated in a 40-day cumulative dose exposure scenario using first-order kinetics to account for uptake and elimination. Assuming comparable absorption to humans, the half-lives (t1/2) for an adult osprey to reach the HTD within 40-days were calculated. For three of these pharmaceuticals, the estimated t1/2 in ospreys was less than that for humans, and thus an osprey might theoretically reach or exceed the HTD in 3-7 days. To complement the exposure model, 24 compounds were quantified in water, fish plasma and osprey nestling plasma from 7 potentially impaired locations in Chesapeake Bay. Of the eighteen analytes detected in water, 8 were found in fish plasma, but only 1 in osprey plasma (the antihypertensive diltiazem). Compared to diltiazem detection rate and concentrations in water (10/12 detects, <MDL-173 ng/L), there was a lower detection frequency in fish (31/233 detects, <MDL-2400 ng/L); however when present in fish, all values exceeded the maximum diltiazem concentration found in water. Diltiazem was found in all 69 osprey plasma samples (540-8630 ng/L), with 41% of these samples exceeding maximum concentrations found in fish. Diltiazem levels in fish and osprey plasma were below the human therapeutic plasma concentration (30,000 ng/L). Effect thresholds for diltiazem are unknown in ospreys at this time, and there is no evidence to suggest adverse effects. This screening-level exposure model can help identify those compounds that warrant further investigation in high-trophic level species.

Thank you to the following contributors to this newsletter.
Brian Hiller
Lynn Miller
Barnett Rattner

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WTWG NEWSLETTER NOTES

The WTWG newsletter is a quarterly publication. Email contributions by December 31 to Louise at lsvenne@gmail.com.

WTWG archived newsletters, meeting minutes, and more are online at http://wildlife.org/toxicology/index.php

The WTWG is on Facebook. Visit us (even without a Facebook account). www.facebook.com/WildlifeToxicology

Follow WTWG on Twitter: @TWSWildlifeTox

Louise Venne, *Editor*