Snake Harvest Working Group
Final Report
(January 4, 2016)

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Texas Parks and Wildlife Department

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BACKGROUND

Snake-themed events are a long-standing tradition in many communities in Texas. Though there is some variation, many in this state are "round-ups" where rattlesnakes are collected and brought to an event where they are purchased or processed depending on the event. Rattlesnakes are often collected for these events by introducing gasoline and / or the associated vapors into winter dens to drive snakes from the den to be harvested. This practice is commonly referred to as "gassing". (For more detailed information on this topic, please see Reference Document 1 in the Reference Documents file.) The impacts of gassing have long been debated and in 2009 Texas Parks and Wildlife Department staff began an internal review of the practice by searching scientific literature. In 2012-2013, petrochemical contamination was listed as a threat to karst invertebrates (invertebrates dwelling in crevices, caves, sinkholes) in Critical Habitat documentation published by the U. S. Fish and Wildlife Service. The implication of this concerned Texas Parks and Wildlife Department staff as it related to other karst invertebrates endemic to Texas. (For a detailed timeline of events, please see Reference Document 2 in the Reference Documents file.)

In 2013, the Texas Parks and Wildlife Department received a petition asking the agency to prohibit the practice of gassing (Reference Document 3). Agency staff briefed the Texas Parks and Wildlife Commission and the Commission directed staff to develop a proposed rule. A rule proposing the prohibition of gassing was published. Public hearings were held. TPWD received correspondence from constituents and elected officials (Reference Document 4). The proposed rule was tabled in 2014 and a Snake Harvest Working Group was created to analyze the practice in detail over the course of a year and provide a report to the Commission regarding findings.

SNAKE HARVEST WORKING GROUP

In September, 2014, TPWD Executive Director, Carter Smith established the Snake Harvest Working Group (SHWG) and the appointment process began. The 12 appointed SHWG members included 4 representatives from the town of Sweetwater, one private landowner who has first-hand knowledge of snake hunting, one landowner from TPWD's Private Lands Advisory Committee, one land manager from TPWD's Wildlife Diversity Advisory Committee, one representative of Texas and Southwestern Cattle Raisers Association, one representative from The Wildlife Society, one representative from Texas Wildlife Association, and 2 representatives from the herpetological community. TPWD provided 8 staff with various areas of expertise to facilitate the SHWG's process by conducting research, taking notes and providing documents as requested, securing meeting spaces, etc. Representative Susan King provided a staff member (Mr. Bryan Law) to serve as the liaison between her office and the SHWG. The TPWD staff and Mr. Law were not "voting members" of the SHWG. See Appendix 1 for the complete list of names.

The SHWG was chaired by Dr. Bill Eikenhorst and was provided a charter and 7 charges to address (Figure 1). The charges to be addressed by the SHWG were:

1. Evaluate snake harvest data, cultural impact and economic trends of snake festivals and roundups
2. Identify measures of success for snake festivals and roundups

3. Review scientific data related to take of snakes with noxious substances (e.g. gasoline fumes) and ecological/habitat impacts from such practices
4. Identify any systematic obstacles to alternative, ecologically sound capture methods
5. Review historic recommendations (previous TPWD/other position statements) regarding related regulations
6. Discuss potential implications to U.S. Fish and Wildlife Service endangered species listing process
7. Provide practical solutions and preferred recommendations in a written report to the Executive Director

Figure 1: Snake Harvest Working Group Charter and Charges

TPWD Snake Harvest Working Group Charter

Purpose and Goal(s)

The Texas Parks and Wildlife Department (TPWD) Snake Harvest Working Group will review the existing practice of using noxious substances, typically gasoline fumes, to collect snakes. The Working Group will identify issues, obstacles and potential solutions to assist the agency in its ongoing commitment to conservation and sustainable wildlife harvest practices, while also striving to maintain the cultural traditions and economic viability of snake festivals and roundups as well as customary farming/ranching practices. The effective achievement of these goals will be a balanced policy that considers stakeholder interests while minimizing impacts to the natural environment.

Context

The agency's mission as reflected in the *Land and Water Resources Conservation and Recreation Plan* is to promote stewardship of lands and waters; increase access and participation in the outdoors; educate and engage citizens in conservation/recreation; and employ sustainable and sound business practices.

Working Group Charges

1. Evaluate snake harvest data, cultural impact and economic trends of snake festivals and roundups
2. Identify measures of success for snake festivals and roundups
3. Review scientific data related to take of snakes with noxious substances (e.g. gasoline fumes) and ecological/habitat impacts from such practices
4. Identify any systematic obstacles to alternative, ecologically sound capture methods
5. Review historic recommendations (previous TPWD/other position statements) regarding related regulations
6. Discuss potential implications to U.S. Fish and Wildlife Service endangered species listing process
7. Provide practical solutions and preferred recommendations in a written report to the Executive Director

Working Group Structure

The Snake Harvest Working Group will consist of a cross-section of relevant stakeholder groups representing private landowners, ranchers, biologists, community business leaders, etc. Members will be appointed by the Executive Director and the work group will be sponsored by the Wildlife Division Director. The agency will make available appropriate subject matter experts as well as administrative support.

Working Group Term

It is expected that a minimum of four meetings will be required and those meetings may be face-to-face or virtual meetings. The work group will be seated in fall 2014 with a written report due by September 1, 2015.

Carter Smith, TPWD Executive Director

17 September 2014
Date

The SHWG met 4 times (12/9/14, 2/11/15, 5/12/15, and 9/2/2015) and analyzed all charges in detail. Meeting minutes were compiled by TPWD staff and approved by the SHWG members (Appendices 2-5). The SHWG also was charged with producing recommendations to the TPWD Commission.

FIRST MEETING

The first SHWG meeting served to establish the group as well as address the following charges;

3. Review scientific data related to take of snakes with noxious substances (e.g. gasoline fumes) and ecological/habitat impacts from such practices

5. Review historic recommendations (previous TPWD/other position statements) regarding related regulations

6. Discuss potential implications to U.S. Fish and Wildlife Service endangered species listing process

CHARGES 3 AND 5 – HISTORY AND BACKGROUND

TPWD staff presented the history and background of the issue and the proposed rule process that led to the creation of the group to ensure that all members were sufficiently aware of the history of the issue. For the sake of efficiency, this information presented to the SHWG pertaining to the history and background is not included as part of this report, but can be found in Reference Document 1 as well as the meeting minutes (Appendix 2).

TPWD staff presented a summary of the scientific research that has been done in the lab as well as in the field documenting the impacts of exposing various species to gasoline and its associated vapors. For additional detail regarding that research, please see "Toxicity of Exposure to Petrochemicals" in Reference Document 1. Group discussion followed the presentation of this material and reactions varied. Individual perspectives on the level of threat that gasoline poses to non-target populations are provided in the Points of Consideration (POC) section from meeting 4 below. Some SHWG members felt that the field research presented was not valid or applicable as it was done outside of Texas or used species of snakes other than western diamondback rattlesnakes (WDR) to demonstrate the effects of gassing. Other members felt the research was valid and applicable believing the location of the studies and the species used were sufficiently similar to provide an accurate understanding of the impacts of gassing in Texas.

Though there are no data to accurately ascertain the land area actually involved in gassing, some SHWG members felt that there isn't enough gassing across a large enough area of the landscape to be a significant concern, and thus said regulation would be a "solution looking for a problem." Others felt that the impacts of introducing gasoline and its associated vapors into karst features were sufficiently damaging at any scale to be a concern.

The origin of the petition was also a point of debate as the history and background of this issue was discussed. Some SHWG members objected to the fact that one of the petition coauthors and many of the signatories were not residents of Texas. Those members felt that non-residents should not be able to

influence regulation in Texas. As a result of this sentiment, HB 763 was passed in the 84th legislative session. For more information on this bill, please see the "Petition to Prohibit Gassing and Resulting Proposed Rule" section of Reference Document 1. Other SHWG members felt that the origin of the petition was irrelevant and that the issue the petition raised was a valid concern that needed to be addressed.

CHARGE 6 - U.S. FISH AND WILDLIFE SERVICE IMPLICATIONS

TPWD staff presented the implications of gassing on karst invertebrates and future listing vulnerabilities. TPWD stated that its goal is to manage for healthy wildlife populations, thus hopefully averting species being listed as federally threatened or endangered. TPWD explained that USFWS considers threats to a species when reviewing a listing decision. Currently, there are 26 species of federally listed karst invertebrates in Texas. During the period from 2012 to 2013, 15 of those species had Critical Habitat (CH) designated. In the documentation for those CH designations, exposure to petrochemicals was listed as a threat to karst invertebrates. In addition to the currently listed karst invertebrate species, there are 130 endemic (occurring nowhere else but Texas) karst invertebrates that occupy the same or similar habitats as the currently listed species. Given the public concern and political debate over recent listings, TPWD stated that it is disconcerting to imagine the scale of economic and political impact if some or all of the additional 130 species were to also become listed. TPWD staff presented the USFWS's "five factors threat analysis" that is used when considering listing decisions. These factors include:

1. Present or threatened destruction, modification, or curtailment of the species' range or habitat
2. Over-use for commercial, recreational, scientific, or educational purposes
3. Disease or predation
4. Inadequacy of existing regulatory mechanisms
5. Other natural or man-made factors affecting the continued existence of the species

Should any of the 130 endemic karst invertebrates be petitioned for listing, TPWD expressed the belief that the practice of gassing would create vulnerabilities related to three of the five factors. TPWD presented evidence that the discharge (purposeful or accidental) of petrochemicals into the environment has been documented to modify and/or destroy habitat for invertebrates (Elliott, 2000) thereby creating vulnerability related to Factor 1. Similarly, purposefully introducing gasoline and/or fumes into the habitat of rare invertebrates could also be considered a man-made factor affecting the continued existence of a species since entire populations have been eliminated by contamination (Elliot, 2000), thereby creating vulnerability related to Factor 5. Finally, TPWD staff expressed the belief that having no regulation on this practice in Texas creates vulnerability related to Factor 4.

Group discussion followed the presentation of this material and reactions varied. Individual perspectives related to the vulnerabilities as outlined by TPWD are provided in the Points of Consideration (POC) section from meeting 4 below. Most SHWG members agreed that introducing gasoline and its associated vapors into dens poses a threat to non-target populations. Most also agreed that proactive measures taken to reduce such threats are preferred to having the U. S. Fish and Wildlife Service (USFWS) become involved. However, this perspective was not unanimous. Some members did not believe the threat to

non-target populations is sufficient to cause concern. Others held the perspective that the burden of proof to demonstrate impact is on the USFWS and we should not regulate ourselves preemptively.

SECOND AND THIRD MEETINGS

It was the overarching goal of the second and third meetings to build a foundational knowledge related to the Sweetwater rattlesnake roundup and the antivenin supply chain. This overarching goal addressed the following working group charges:

1. Evaluate snake harvest data, cultural impact and economic trends of snake festivals and roundups

2. Identify measures of success for snake festivals and roundups

To attempt to address charges 1 and 2, TPWD staff contacted organizers from as many extant snake-themed events as possible to gather data regarding their events. TPWD staff was able to reach a total of twenty-one of the twenty-five events known to exist. Contact was established either by calling or emailing event organizers as well as other community leaders (such as mayors or Chambers of Commerce) if possible to verify information. Although the information gathered was based on estimates and is not reliable for scientifically rigorous analysis, TPWD staff attempted to ascertain trends and identify metrics for success for such events. For more detailed information, graphs, etc. regarding the data presented to the SHWG, please see Reference Document 5.

TPWD staff presented the results of the information gathering effort to the SHWG. Given the limitations of the data, some general patterns contributing to the success of events were presented. An obvious trend was that such events are economically valuable to the host organizations and/or the communities in which they are held. Though event profit is important, it did not turn out to be a good, sole measure of success since several events do not strive to make a profit, but rather strive to use the event to simply bring tourist dollars into their community to bolster hotel, restaurant, gasoline, etc. sales. Therefore a more universal trend emerged that attendance is the best measure of success. The analysis of snake-themed events revealed that although there are fewer such events today than historically, those that remain have attendance levels that are stable or growing. The information gathered and presented revealed a positive relationship between an event's level of diversification and attendance. Diversification is simply having multiple "types" of things (such as concerts, races, softball tournaments, gun shows, etc.) occurring alongside the "rattlesnake" aspect of an event. In general, events that are more diversified have higher attendance. However, when the organizers were asked to name the one factor that most directly affected attendance at their events, the vast majority indicated that weather was the primary factor. In short, bad weather often trumps other factors and hurts attendance.

TPWD staff also presented information on the influence of snake harvest numbers on attendance. Events that are centered around the WDR (in Texas and Oklahoma) often involve one or more pits containing large numbers of snakes. According to the information gathered, there does not appear to be a correlation between the number of snakes at the event and attendance each year.

The overarching conclusion that TPWD staff presented to the SHWG was that snake-themed events have declined across the nation over the years, but those that remain are diversified and remain stable or are thriving.

Group discussion followed the presentation of this material and reactions varied. Individual perspectives related to the metrics of success at snake-themed events as outlined by TPWD are provided in the Points of Consideration (POC) section from meeting 4 below. There was no debate that such events are economically and culturally valuable to the communities in which they are held and that the remaining events are generally stable or thriving. The city of Sweetwater confirmed this for their event by commissioning a study in 2015 to determine the economic impact of the Roundup to the local community ($8.4 million in 2015). The full report can be accessed at:

http://sweetwatertexas.org/wp-content/uploads/2015/12/Sweetwater%20Rattlesnake%20Roundup_EIA_report-20154_FINAL.pdf

Some SHWG members accepted the information TPWD presented as an accurate representation of the various events. However, others felt the information gathered was unreliable. They felt the event organizers were being untruthful in reporting numbers, attendance, etc. in an attempt to make their event appear more successful than it is. Some also expressed a belief that TPWD staff could have "led" the information gathering process to arrive at a desired conclusion.

It seemed as though much of the objection to the information itself orbited around the nuance of factors affecting attendance. One member acknowledged that it made sense that more diversified events are better attended, but that this should not obscure the fact that people come to such events to see snakes. This person expressed the belief that rattlesnakes are the anchor or draw of an event and all of the other events that occur alongside them are simply to bolster the main attraction. Some agreed with the assessment that weather impacts attendance, but opined that this factor as one among many rather than a prominent one. Finally, there was much debate about the correlation between numbers of snakes and the influence on attendance. Most everyone agreed that the attendance at an event in any particular year is not correlated to the number of snakes brought to the event that year. This is evidenced by the fact that vendors and attendees make plans to attend events without any knowledge of the number of snakes that will be brought in. However, some members expressed the belief that Sweetwater is unique in that attendance at that event is driven by an expectation of higher harvest numbers. At the center of the issue, a SHWG representative from Sweetwater indicated that they need 4,000 pounds of snakes to have a successful event. He suggested that a ban on the use of gasoline will result in harvest below 4,000 pounds, and thus have a negative impact on the roundup. Others did not agree with that perspective. They expressed the belief that there simply needs to be enough snakes at an event for attendees to feel like they've seen a lot of snakes. They did not feel that Sweetwater's event was unique in that aspect nor would a prohibition of the use of gasoline would keep them from having enough snakes for a successful event.

ANTIVENIN AND MEDICAL RESEARCH

As part of the cultural as well as economic impact of snake-themed events, potential impacts to the availability of venom for antivenin, pet vaccine production, and medical research were researched. TPWD staff corresponded with the two companies that manufacture the antivenin and pet vaccine for the WDR. TPWD staff also corresponded with five of six major venom suppliers in the U.S. (one would not respond to correspondence after the initial contact) and one in Europe who deal in WDR venom. Finally, TPWD staff corresponded with three nationally and/or internationally recognized venom researchers. The results of the information gathered were presented to the group. For detailed information regarding the data presented to the SHWG, please see Reference Document 6.

The WDR antivenin (CroFab) manufacturer (BTG International) provided statements in 2010 and 2014 indicating that venom in their supply chain was produced under strict laboratory protocols and that outside venom sources cannot be used. Through a dialogue with them, we learned that there was a possibility of outside venom (presumably from Texas roundups) making its way into their supply chain during a period of 2011 – 2013. They revised their purchasing terms and conditions in January of 2014 in an apparent effort to ensure that this possibility is eliminated in the future.

Red Rock Biologics manufactures the pet vaccine for WDR envenomation. They indicated that their venom supply comes from captive colonies.

All but one of the venom suppliers TPWD contacted indicated that the market demand for WDR venom could be met with captive colonies and/or other collection methods should gassing be prohibited. The one outlier felt that permitting requirements in Texas would need to be relaxed to meet the demand should gassing be prohibited.

The researchers indicated that the venom industry has changed a great deal over the last decades. The industry has moved away from using large volumes of pooled venom and the standard is now smaller amounts of venom from individual specimens of known geographic origin maintained in captivity. Venom is collected in labs from specimens kept with proper care and companies isolate specific components of venoms that are most useful for their purposes and produce them synthetically for use in pharmaceuticals.

As a result of this feedback from the venom industry, the overarching message from TPWD's presentation to the group was that a prohibition on gassing would have little to no impact on WDR venom availability for antivenin/vaccine production or medical research.

Group discussion followed the presentation of this material and reactions varied. Individual perspectives related to the venom industry information presented by TPWD are provided in the Points of Consideration (POC) section from meeting 4 below. The debate that followed this presentation focused primarily on the veracity of the information TPWD received. Most of the members felt the information presented accurately represented the venom industry's perspective. However, some members expressed the belief that the suppliers, manufacturers, and researchers were being untruthful about the source of their venom for fear of the public relations damage that would result if the public knew that some venom came from gassed snakes at roundups. Others postulated that industry representatives lied because a government official was inquiring.

ALTERNATIVE CAPTURE METHODS

The SHWG was also to address the following charge:

4. Identify any systematic obstacles to alternative, ecologically sound capture methods

Throughout various meetings, alternative means of capturing rattlesnakes were discussed. Some SHWG members have indicated that a gassing prohibition would eliminate the ability to capture a sufficient volume of snakes for a successful event. Others noted that gassing is illegal in other states, and successful events are still held each year. This is because there are several other effective methods that snake hunters use to harvest WDR (Arena et al, 1995). These include traps, capture at dens in early spring as snakes bask, road cruising and surface cover searches. Reference Document 7 provides a more detailed description of the various methods and their strengths and weaknesses.

During the group discussions related to alternative collection methods, various perspectives were represented. Research papers were provided to SHWG members detailing methods snake enthusiasts and researchers routinely employ for live snake capture. However, some members indicated that the hunters who supply the Sweetwater event would simply stop hunting snakes if gassing were prohibited. Other members indicated that they, or hunters who work their property each year, employ other methods and successfully capture volumes of snakes delivered to snake-themed events. In addition to published literature provided, TPWD staff also provided the SHWG a case study detailing a rattlesnake control program in South Dakota that existed for decades (Reference Document 8). This program employed snake traps to capture tens of thousands of rattlesnakes with numerous records of traps capturing approximately one hundred snakes at a time. One member denied that it is possible to capture sufficient volume of snakes using traps and discounted the case study. Others opposed that belief and offered examples of snake collecting teams utilizing methods other than gassing.

Much of the discussion revolved around the various nuances of capture methods. For example, some methods (road cruising and surface cover searches) are most effective once snakes have left the den and are active on summer feeding grounds. On the contrary, for maximum efficacy, one should deploy traps at den locations and capture snakes either entering the den in the fall, emerging to bask on warm winter days, or departing in the spring. Similarly, actively capturing snakes around dens (without using traps) is most effective at those times of the year. As a result, trapping and active collection at the mouths of dens were considered by some members to be viable alternatives to gassing. Due to the current early spring timing of when some Texas events are held, there was concern expressed that these methods would not allow certainty that hunters can capture enough snakes given the influence of weather on rattlesnake behavior at the mouths of dens. Some members countered that event dates could be shifted to later in the season to ensure sufficient opportunity for hunters to capture snakes using these methods.

In addition to trapping, the conversation progressed to creating artificial dens with access ports that could be harvested at will or gassed without concern for impact to non-target karst species. Information about creating artificial dens was shared with the working group. Some members dismissed the concept expressing doubt in their efficacy and concern about the cost of installation. Others cited examples of

WDRs readily denning under man-made structures and noting that such conditions could easily be replicated using low cost materials.

MEETING 4

It became clear through the process that perspectives within the SHWG related to the various aspects of the gassing issue were not unanimous and that it would not be possible to provide what was assigned to the group in the following charge:

7. Provide practical solutions/preferred recommendations in a written report to the Executive Director

The individuals on this working group represented the wide range of views that constituents hold regarding this means of collection. Dr. Eikenhorst encouraged each SHWG member to write his/her perspective to be included, unedited, as part of this report effort. These unedited perspectives are found in Reference Document 9. As a result of the varying perspectives, there are few, if any, universally accepted recommendations that will be presented in this document. However, to ascertain the level of consensus for various concepts critical to the complete understanding of this issue, Chairman Eikenhorst directed SHWG members and TPWD staff to develop a series of statements encapsulating the areas of debate.

WORKING GROUP POINTS OF CONSIDERATION

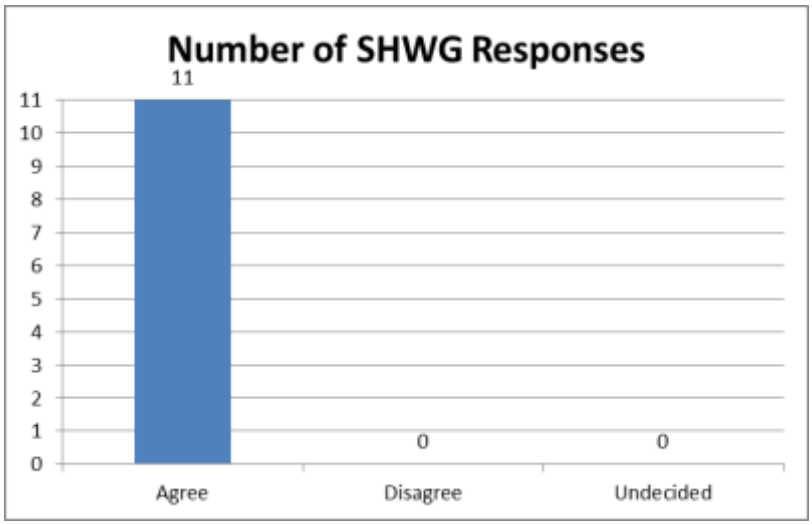
Fourteen such statements or "Points of Consideration" (POC) were drafted and approved by all members of the SHWG. These POC were then distributed to all SHWG members who were then offered the opportunity to register their opinion on each. Completed POC documents were received from 11 of the 12 SHWG members. This opinion was registered in the form of checking a box stating he/she agrees with the statement, disagrees, or is undecided. Since simply checking a box does not allow for nuance, a comment box was added to each question and each SHWG member was instructed to use this box to offer clarifying statements if desired. The SHWG was assured that those documents would be added to this report unedited. Those documents are found in Appendix 6. Using the feedback provided by these POC responses, the level of agreement or disagreement with critical statements or concepts related to gassing can be gauged.

Snake-Theme Events / Festivals

Point of Consideration #1 - Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

All eleven members agreed with this statement (Graph 1).

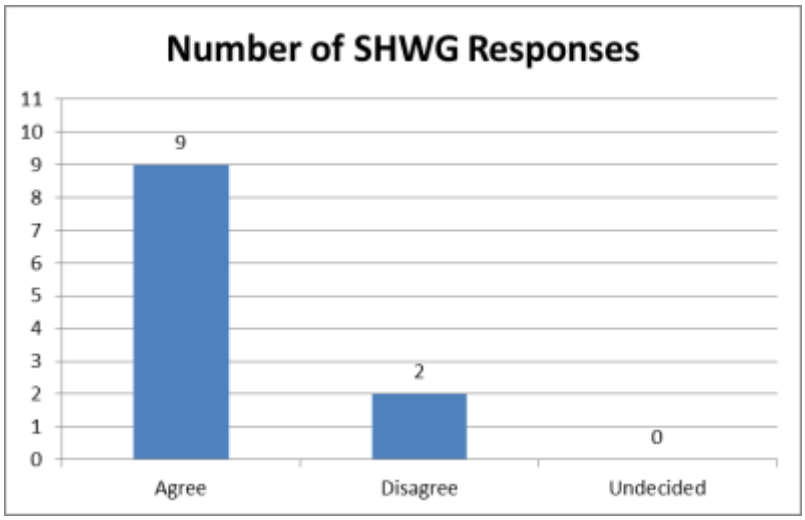
Graph 1: POC #1 Responses



Point of Consideration #2 - Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

Nine of eleven SHWG members agreed with this statement (Graph 2). Two disagreed.

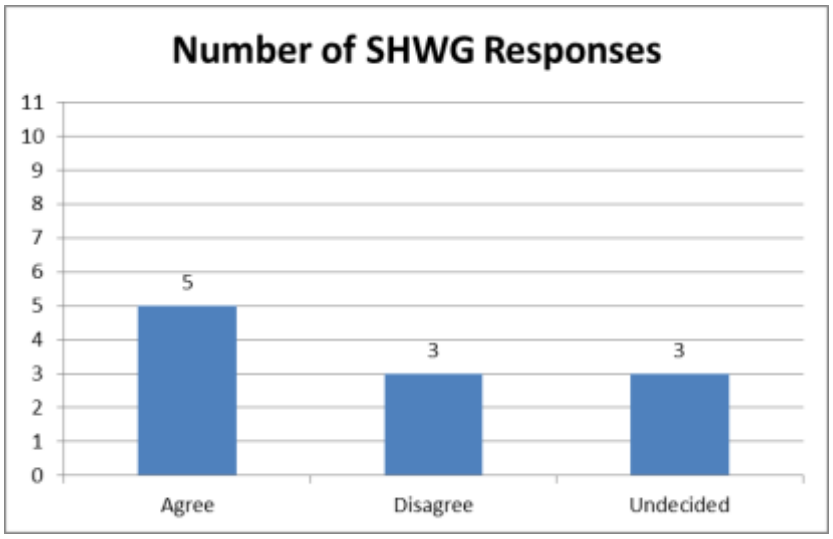
Graph 2: POC #2 Responses



Point of Consideration #3 - Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

Five of eleven SHWG members agreed with this statement (Graph 3). Three disagreed. Three were undecided.

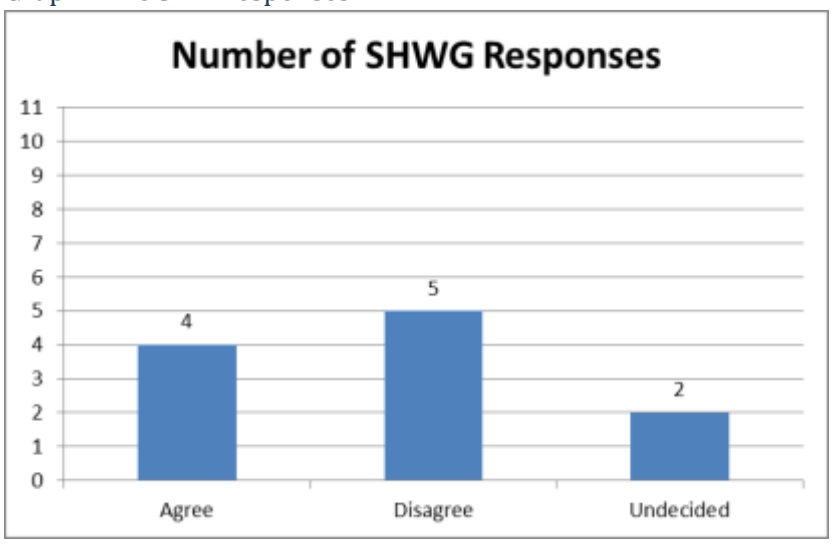
Graph 3: POC #3 Responses



Point of Consideration #4 - In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

Four of eleven members agreed with this statement (Graph 4). Five disagreed. Two were undecided.

Graph 4: POC #4 Responses

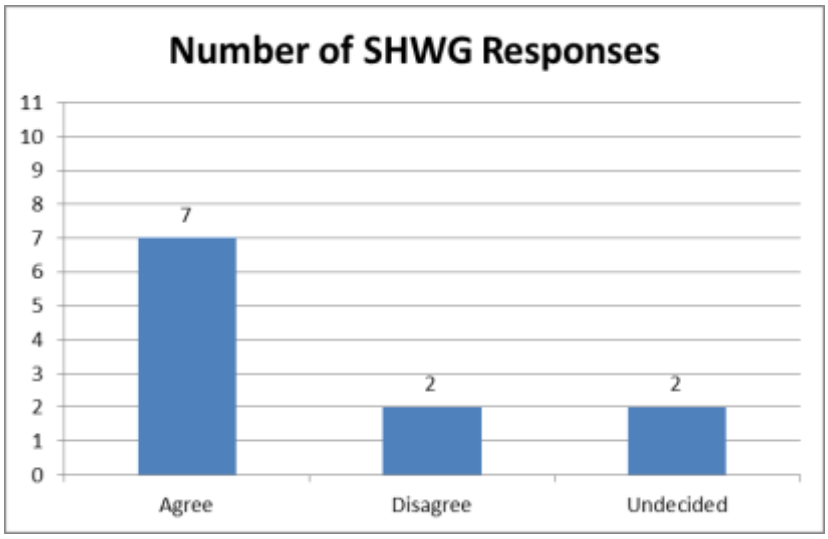


Antivenin and Medical Research

Point of Consideration #5 - 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

Seven of eleven members agreed with this statement (Graph 5). Two disagreed. Two were undecided.

Graph 5: POC #5 Responses

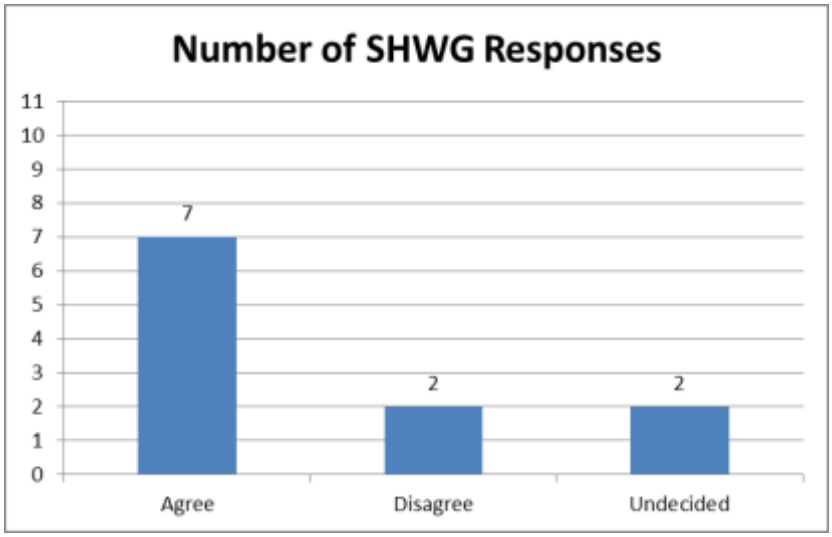


Gassing as a Threat to Non-Target Species

Point of Consideration #6 - Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

Seven of eleven members agreed with this statement (Graph 6). Two disagreed. Two were undecided.

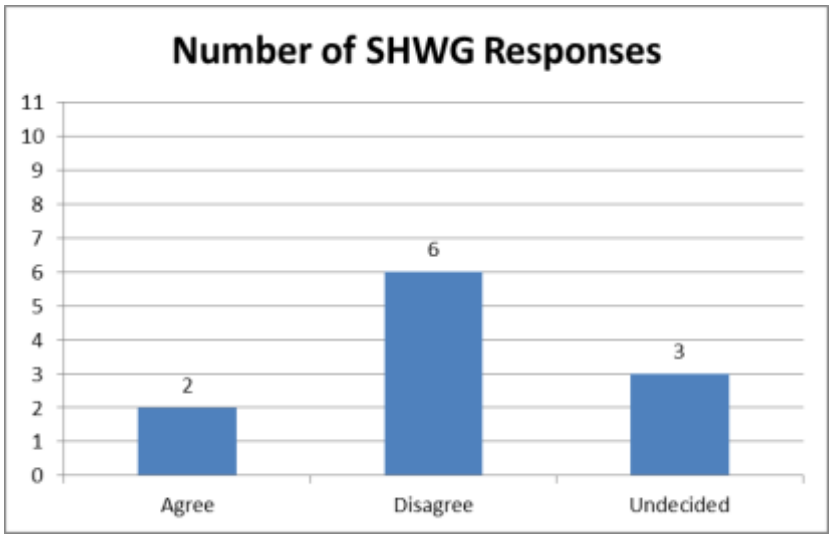
Graph 6: POC #6 Responses



Point of Consideration #7 - The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

Two of eleven members agreed with this statement (Graph 7). Six disagreed. Three were undecided.

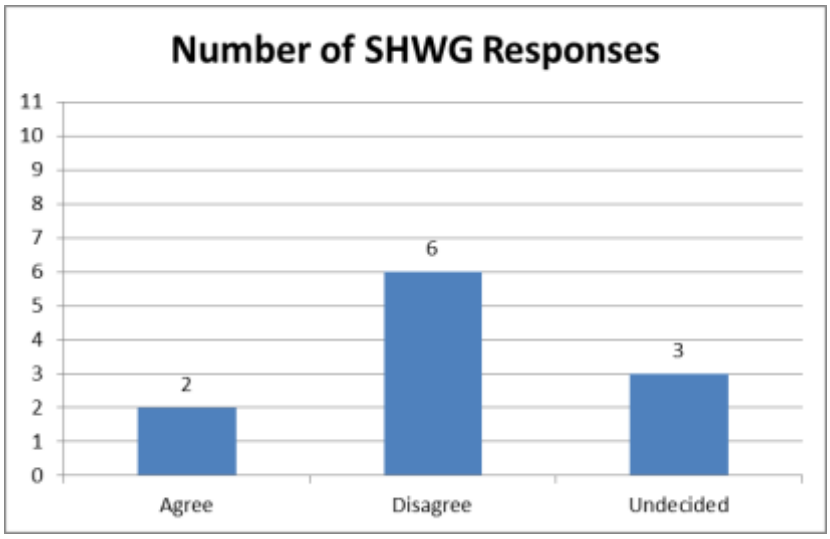
Graph 7: POC #7 Responses



Point of Consideration #8 - The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

Two of eleven members agreed with this statement (Graph 8). Six disagreed. Three were undecided.

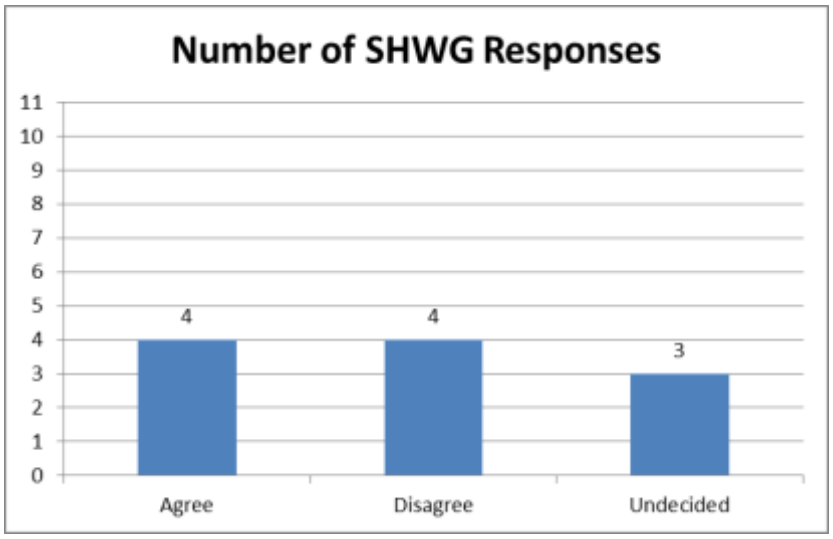
Graph 8: POC #8 Responses



Point of Consideration #9 - The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

Four of eleven members agreed with this statement (Graph 9). Four disagreed. Three were undecided.

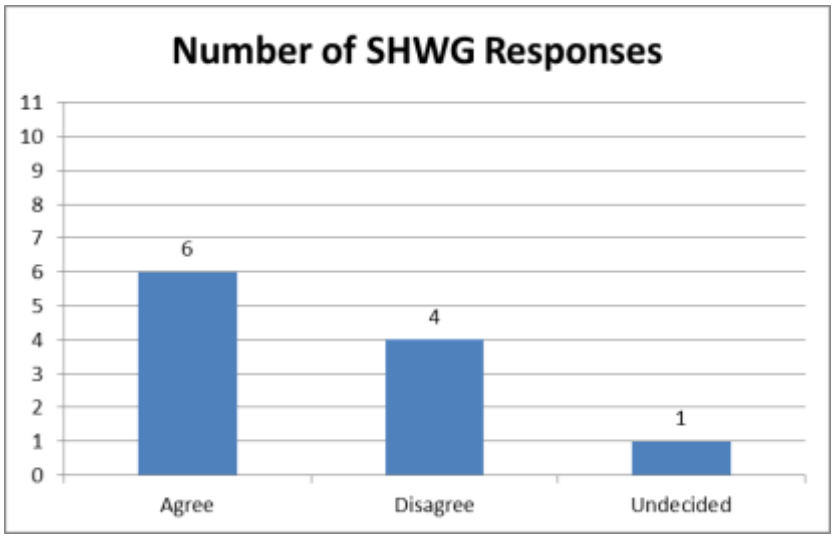
Graph 9: POC #9 Responses



Point of Consideration #10 - The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

Six of eleven members agreed with this statement (Graph 10). Four disagreed. One was undecided.

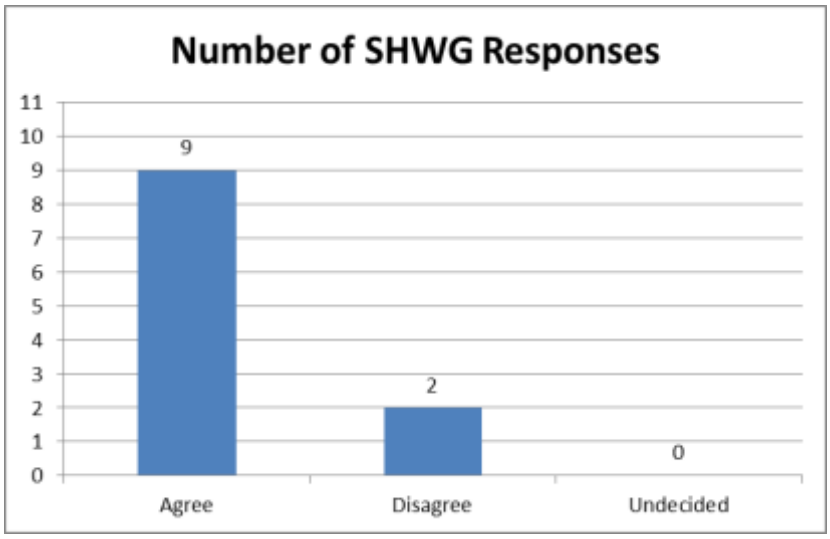
Graph 10: POC #10 Responses



Point of Consideration #11 - Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

Nine of eleven members agreed with this statement (Graph 11). Two disagreed.

Graph 11: POC #11 Responses

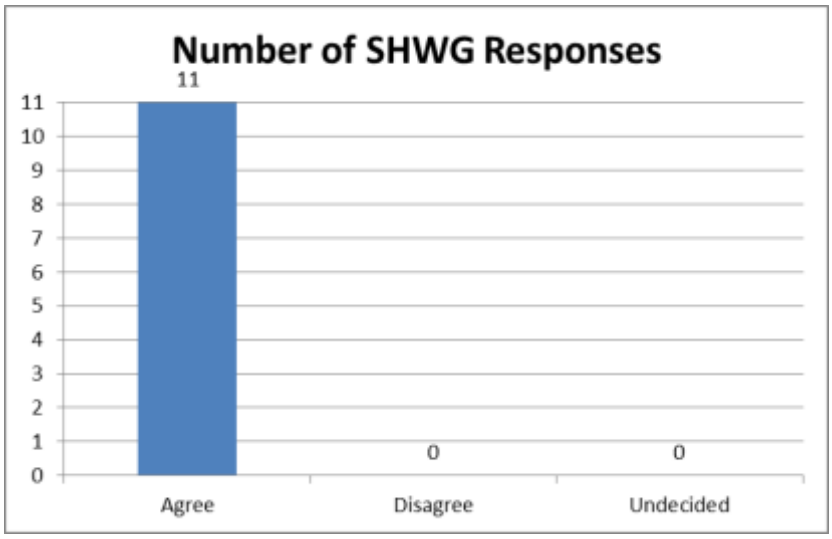


Permits and Western Diamondback Rattlesnakes

Point of Consideration #12 - Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

All eleven members agreed with this statement (Graph 12).

Graph 12: POC #12 Responses

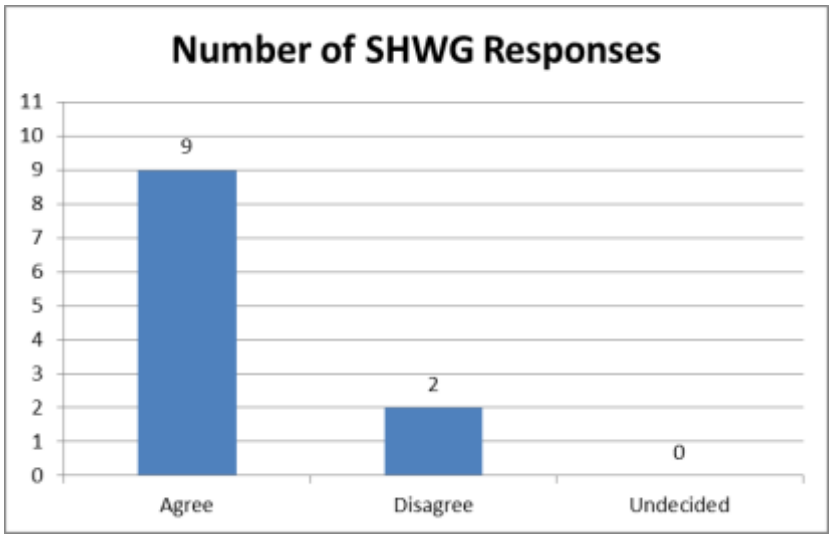


Managing Rattlesnakes Around Man-Made Structures

Point of Consideration #13 - If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

Nine of eleven members agreed with this statement (Graph 13). Two disagreed.

Graph13: POC #13 Responses

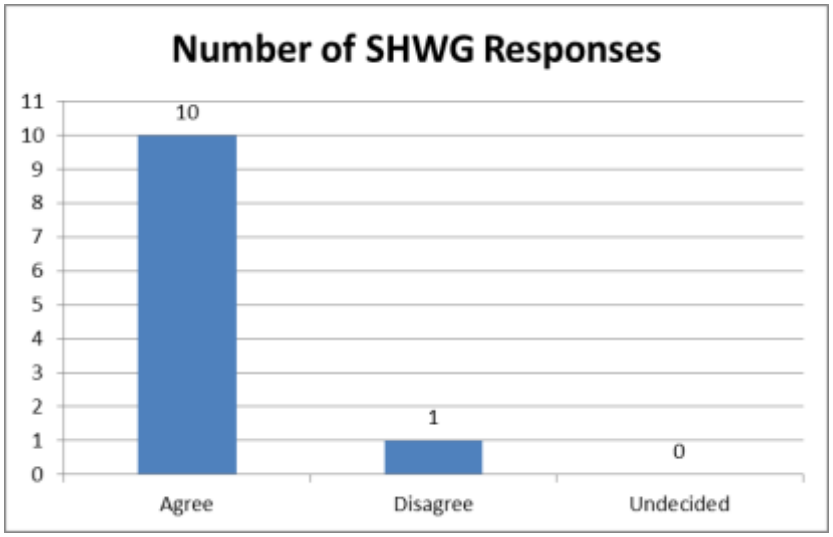


Alternative Means of Collection

Point of Consideration #14 - Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

Ten of eleven members agreed with this statement (Graph 14). One disagreed.

Graph 14: POC #14 Responses



CONCLUSION

Twelve dedicated constituents volunteered a great deal of time and energy to delve deeply into the practice of gassing. Individuals were chosen to be on the working group to represent divergent opinions. Each member represented his or her perspective in what was often spirited and passionate debate. By the end of the working group's time together, a few areas of clear agreement were discovered, but many

areas of disagreement remained. However, the process remained flexible and inclusive to all perspectives and every attempt was made to ensure that each person's perspective was represented.

APPENDICES

APPENDIX 1: SNAKE HARVEST WORKING GROUP PARTICIPANT LIST

Sal.	First Name	MI	Last Name	Title	Affiliation	Address 1	Address 2	City	State	Zip Code	Office Phone	Alt. Phone	Cell Phone	Email	Notes
Mrs.	Leah	C.	Andrews	Director & EVP	Sweetwater Chamber of Commerce	PO Box 1148		Sweetwater	TX	79556	(800) 658-6757	(325)388-2384		landrews@sweetwatertexas.org	
Mr.	Ken		Becker	Executive Director	Sweetwater Enterprise for Economic Development (SEED)	PO Box 785	810 E. Broadway	Sweetwater	TX	79556	(877) 301-7333	(325) 235-0555	(325) 998-4020	ken@sweetwatertexas.net	
Ms.	Donna		Boatright	Administrator	Rolling Plains Memorial Hospital	PO Box 690		Sweetwater	TX	79556	(325) 235-1701 ext 220			donab@rpmh.net	
Mr.	Dennis	V.	Cumbie		Sweetwater JayCees	1622 Morris Avenue		Sweetwater	TX	79556			(325)660-8324	dvcumbie@icloud.com	
Mr.	Rob		Denkhaus	Chairman	Wildlife Diversity Advisory Committee	9601 Fossil Ridge Road		Fort Worth	TX	76135	(817) 392-7422		(817) 584-5417	robert.denkhaus@fortworthgov.org	
Dr.	Bill		Eikenhorst	Chairman	Private Lands Advisory Committee	1907 Highway 105		Brenham	TX	77833			(979) 830-3814	vetdocbill@hotmail.com	Chairman of the Snake Harvest Working Group
Mr.	Terry		Hibbitts		Herpetological Community Representative	PO Box 695		Camp Wood	TX	78833		(830)597-6435	(830) 261-1012	thibb@swtexas.net	
Mr.	Kaleb		McLaurin	Director of Governmental Affairs	Texas and Southwestern Cattle Raiser's Association	1005 Congress Avenue	Suite 1050	Austin	TX	78701	(512) 469-0171		(936) 563-4437	kmclaurin@tscra.org	
Mr.	Don		Roeber		Herpetological Community Representative	9115 Bentwater Parkway		Cedar Hill	TX	75104	(972) 295-8943		(972) 765-6439	donroeber@sbcglobal.net	
Mr.	Don		Steinbach		Tx Chapter of The Wildlife Society	3686 Rehburg Road		Burton	TX	77835		Hm 979-289-3909	(979) 255-8676	d-steinbach@email.tamu.edu	
Mr.	Billy		Wright		Tx Wildlife Association	Box 227		Cisco	TX	76437		(254) 442-1155	(254) 433-2446	wbwpc@sbcglobal.net	
Mr.	James		Wright	Private Landowner		PO Box 1020		Coleman	TX	76834		(325)625-9062	(325) 348-8300	jrwright@web-access.net	
Mr.	Clayton		Wolf	Wildlife Division Director	Texas Parks & Wildlife Department	4200 Smith School Road		Austin	TX	78744	(512) 389-4971			clayton.wolf@tpwd.texas.gov	
Mr.	John		Davis	Wildlife Diversity Program Director	Texas Parks & Wildlife Department	4200 Smith School Road		Austin	TX	78744	(512) 389-8587			john.davis@tpwd.texas.gov	
Mr.	Kevin		Davis	Game Warden	Texas Parks & Wildlife Department	4200 Smith School Road		Austin	TX	78744	(512) 389-4626			kevin.davis@tpwd.texas.gov	
Dr.	Bob		Dittmar	Wildlife Veterinarian	Texas Parks & Wildlife Department	700 Main Street	CB 103 E	Austin	TX	78744	(830) 896-9045 ext 1675	(830 890-1230		bob.dittmar@tpwd.texas.gov	
Mr.	Bryan		Law	Chief of Staff	Representative Susan King's office	Rep. Susan King, State Capitol	PO Box 2910	Austin	TX	78768-2910	(512) 463-0718		(325) 665-4930	bryan.law@house.state.tx.us	

APPENDIX 2: SNAKE HARVEST WORKING GROUP MINUTES FROM MEETING #1

Snake Harvest Working Group Meeting Notes

December 9, 2014 10:00 – 3:00

The Snake Harvest Working Group convened at 10:00 a.m. at Staybridge Suites in Austin, Texas.

Meeting 12/9/2014	Attendance	Affiliation
X	Leah Andrews	Sweetwater Chamber of Commerce
X	Ken Becker	Sweetwater Enterprise for Economic Development (SEED)
X	Donna Boatwright	Rolling Plains Memorial Hospital
X	Dennis Cumbie	Sweetwater JayCees
X	John Davis	Texas Parks & Wildlife Department
X	Kevin Davis	Texas Parks & Wildlife Department
X	Rob Denkhaus	Wildlife Diversity Advisory Committee
X	Bob Dittmar	Texas Parks & Wildlife Department
X	Bill Eikenhorst	Private Lands Advisory Committee
X	Terry Hibbitts	Herpetological Community Representative
X	Bryan Law	Representative Susan King's office
X	Kaleb McLaurin	Texas and Southwestern Cattle Raisers Association
X	Don Roeber	Herpetological Community Representative
X	Don Steinbach	Texas Chapter of The Wildlife Society
X	Billy Wright	Texas Wildlife Association
X	James Wright	Landowner

CONTENTS

OPENING REMARKS AND INTRODUCTIONS

Opening Remarks – TPWD Deputy Executive Director, Ross Melinchuk welcomed the group, thanked them for their time, and designated Dr. Bill Eikenhorst as the chair of the working group. He assured the group that there is no predetermined outcome while directing them to the group's charge of using the working group process to develop recommendations based on common ground that balances the cultural and economic aspects of rattlesnake festivals while allowing for the long-term sustainability of karst environments and the organisms inhabiting them. He closed by outlining a proposed structure for the current meeting as well as future meetings to allow for all aspects of the issue to be examined.

Introductions – Clayton Wolf – Each working group member was given a few minutes to introduce himself/herself and tell everyone a little about themselves and their interest in the topic the working group is analyzing.

THE SCIENCE, HISTORY AND CURRENT STATUS

SNAKE HARVEST SCIENCE AND HISTORY

Slide Show Presentation

John Davis presented a Powerpoint presentation providing an overview of the history of gassing, biological concerns, and the timeline of events that have occurred. After the presentation, Dr. Eikenhorst opened the floor to discussion and several general topics of discussion emerged:

Action: Distribute Power Point to Working Group.

The Petition

The group wanted to know who submitted the petition for rulemaking. It was confirmed that one of the authors of the petition, as well as multiple signatories, were not Texas residents. TPWD staff indicated they would provide the petition to the working group to address any questions. TPWD staff confirmed that petitions from out-of-state residents must still be addressed. Representative King's staff representative (Bryan Law) indicated legislative offices have realized the current state law allows "out-of-state" petition requests and several legislative offices are planning to address that issue.

Action: Provide information on the petition for rulemaking.

Breadth of Impact

The group attempted to ascertain how much land area was affected by gassing. Mr. Davis' presentation highlighted the counties where commercial collection is known to have occurred, but that does not accurately represent the land area impacted by gassing. One member asked if staff could get the percentage of Texas that is underlain with karst topography. Staff agreed to try and obtain this information. Another member indicated the amount of land area impacted would be extremely limited, though no one was able to provide sufficient data to arrive at an accurate estimate.

The group attempted to ascertain how many people are actually using this method of take. TPWD staff presented the results of the survey sent to all individuals permitted to collect wildlife, but one member felt that the survey responses were inaccurate and that there are many more individuals using gas who

will not tell the state they are using this method. He also indicated that there are collectors/dealers operating without a permit, so they would not have been included in the survey.

Non-hydrocarbons

There was discussion concerning research on the use of non-hydrocarbons like alcohol to collect snakes. No one was aware of any such field studies. In the Compact Disk (literature/studies) distributed to the group, there were reports on the toxicology of petrochemicals; however, these studies used mice, rabbits, dogs, chimps because those animals best reflect how a substance affects humans.

Gassing/Take Practices

The group asked, when gassing large areas where would invertebrates (crickets, bees, etc.) go? Some were concerned that because of the residue, species are not able to return to the den. There were differing opinions on the lingering effects of gassing on a den. One member replied that in his experience, some locations have been gassed every year and there are snakes there each year so he assumes there isn't a residue problem. Another member detailed a different experience indicating that the snake hunters who work his property stopped gassing dens because they believed it makes dens uninhabitable. He indicated that his hunters choose not to use gas so they can harvest snakes from the same dens year after year and not have to cultivate new landowner relationships or spend time and money locating new dens each year.

One member said there is a lot of misunderstanding with gassing and that people don't understand how it's done. He indicated that gassing is practical to catch an adequate amount of snakes and that picking up one or two snakes at a time isn't practical. He also indicted that they attach a long tube with a hole in the end to garden sprayers containing gasoline and insert that tube into dens, crevices, etc., and spray about a cupful of gasoline per den into the hole and it's the fumes that drives animals out. He indicated that enough has to be sprayed into the den to "do some good," so large caves are generally not gassed. He wasn't aware of any studies on gassing an actual den but said he would love to see some.

The group was interested in the impact of gassing dens multiple times in the same season but no one was aware of research documenting this.

Sweetwater Round-Up Process / Metrics

More than one member explained that the original goal of Sweetwater Round Up (Round Up) was to kill snakes because they were killing livestock. In the beginning the snakes were collected, put in a hole and shot. They further explained that the event has now evolved into a culture, like cultivating deer. The Round Up is a source of community pride, hotels are booked months in advance, kids enjoy it, etc. It was estimated that 90% of the snakes that come to the Round Up are collected and held prior to the event with only about 10% being collected the weekend of the event. He went on to estimate that the majority of snakes that come "wet" with gasoline are not accepted. He indicated that gassed and non-gassed snakes are not separated. A member asked about the fate of the snakes that come to the event: some snakes are processed and the venom is sold to dealers who use it for antivenom production and/or medical research. The heads, skins, and rattles are sold for making products, the meat is either consumed by patrons of the event or sold for human consumption, and some organs are sold for human consumption as well. Mr. Cumbie invited everyone to the next Round Up scheduled for the second weekend of March.

Contaminants in Meat / Organs / Venom

The group expressed concern for contaminants from gassing being found in the meat, organs and/or venom. One member indicated that the risk of contaminants was minute at best though no one was aware of any studies documenting this.

The group asked if there are USDA regulations. It was established that there are United States Department of Agriculture (USDA) regulations and it was indicated that the snake meat at the Round Up is inspected by the appropriate authorities.

Snake Bite Data and AntiVenom

There were concerns expressed that rattlesnakes pose a public health threat (via snake bites). Currently, CroFab is the only Food and Drug Administration (FDA) approved antivenom for Crotalids and the cost is about $3,000 a vial. Sometimes multiple vials are needed to treat an envenomation. A group member voiced concern that these costs could increase if gassing is reduced or banned in Texas.

The group asked if Donna Boatwright could obtain metrics regarding snake bites in Texas per year. She agreed to try to get that information.

There was discussion about the venom industry and a new, antivenom in production (Anavip), but no conclusions were made. It was determined that this topic would need to be examined in greater detail in a future meeting.

Impact of "No Take" by Fumes

The question was raised, "What would be the impact to the take of snakes if gassing were prohibited?" Several in the group reiterated that a prohibition on using gas would not place limits on the number of snakes one can harvest. There was agreement that the issue wasn't about prohibiting the take of snakes, just one particular method of take; using gasoline. One member suggested that a prohibition on using gas would cause 90% of the snake collectors to stop collecting snakes. There were concerns expressed over whether the population of snakes would increase and result in more snake bites, etc. No one has reliable data regarding the impact of commercial collection on rattlesnake populations. As previously mentioned, the original goal of the Round Up was to eradicate rattlesnakes. The Sweetwater community and Round Up organizers realized after a couple of years that that goal was not being met. They now indicate they are "controlling" the population, but there isn't data to accurately predict the impact to snake populations.

Alternatives to a Complete Prohibition

One member suggested an alternative to a complete prohibition that would limit where it would be legal to use gas. For instance, prohibit use in karst features of a significant or specific size (e.g., holes large enough for a man to fit). He also suggested a law that could limit amounts of gas, instead of excluding gas totally.

USFWS LISTING PROCESS AND POTENTIAL VULNERABILITIES FOR TEXAS

Though Mr. Davis does not work for the US Fish and Wildlife Service (USFWS), he provided an overview of the USFWS listing process and implications for Texas. He indicated that the state's goal is to manage for healthy wildlife populations, thus hopefully averting species being listed as federally threatened or endangered. The USFWS considers threats to a species when reviewing a listing decision rather than absolute numbers of individuals. Mr. Davis gave the example that there could be a million individuals of a particular bat species, but if they are all found in one cave, then that species could be considered endangered if that cave is threatened with destruction. Mr. Davis indicated that the threat gassing poses to the species occupying karst features is disconcerting given that petrochemicals were named as a threat to karst invertebrates in recent Critical Habitat designation documentation.

The group asked if USFWS considers economic impact in its review of a listing decision. TPWD staff responded that the Endangered Species Act (ESA) does not require that of USFWS. The group sought clarification as to TPWD's concerns on this topic. TPWD responded that there are an additional 130 species of endemic karst invertebrates that occupy similar habitats to currently listed species. Given the public concern and political debate over recent listings, it is very disconcerting to imagine the scale of economic and political impact if some or all of the additional 130 species were to also become listed. A concern was expressed that we shouldn't worry asserting that many of these karst species aren't in crevices with a snake or else they would be eaten and also that we don't have enough info currently. Others favored proactive measures on the part of the State to keep the USFWS from becoming involved. The Chairman agreed that we do not know all of the impacts on all species in all scenarios, but doing nothing is not an option.

The group wondered if there has ever been a filing on illegal take of karst invertebrates. Agency staff wasn't sure, but they conveyed the extreme measures that companies have been employing in Bexar County to avoid take of the recently listed karst invertebrates.

One member indicated that mitigation banking might be a solution via conservation plans for karst species. Staff clarified that mitigation banking is a tool reserved for listed species and is not used prior to listing. Numerous members voiced the opinion that the benefits of voluntary pre-listing efforts by landowners and the State far out-weighed any strategies that officially involved USFWS.

SNAKE COLLECTOR VS. HUNTER MOTIVATIONS

The group discussed the difference between hunters who want the challenge of the "hunt" and commercial collectors who are seeking a large volume of snakes. It was agreed that it would be advantageous to better understand the motivations of commercial collectors. Several were very interested in more information on hunter/collector motivation (perhaps the North American model vs. Collection?).

ALTERNATIVES TO USING GASOLINE

Don Roeber suggested a simple solution based on the premise that rattlesnakes avoid Indigo snake scent. He suggested that artificially manufacturing that scent and spraying it in the holes would be a more ecologically sensitive method if in fact it were effective.

ANALYZE CHARGES 1, 2 AND 4, DISCUSS WHAT SUCCESS LOOKS LIKE AND DETERMINE DATA AND PRESENTATION NEEDS FOR NEXT MEETING

Dr. Eikenhorst initiated a discussion on a review of the working group charges to ensure that all identified charges are addressed throughout the process.

- Charter Charge 1: Evaluate snake harvest data, cultural impact and economic trends of snake festivals and roundups
- Charter Charge 2: Identify measures of success for snake festivals and roundups
- Charter Charge 4: Identify any systematic obstacles to alternative, ecologically sound capture methods

Clayton Wolf suggested that, although much of the conversation revolved around the practice of gassing snake dens, true measures of success as described by the group include:

- Economic Vitality of Festivals – What makes a successful event?
- Human Health and Safety – snakebites, antivenom supply, residue in meat, etc.
- Averting Endangered Species Listing
- Preserving Heritage

Wolf said that the group should test assumptions related to the association between gassing and the factors above.

CONCLUSION

General Consensus

At the close of discussions, Dr. Eikenhorst asked for final thoughts and/or impressions. Most participants felt the discussions of the day were positive and that there was enough common ground to develop a solution or resolution.

Next Meeting

The group discussed the location and timing of the next meeting. Suggested locations included: Wichita Falls or Cabelas in Austin. The majority preferred a location west of Interstate 35. Brownwood was also discussed as a possibility. The group agreed that a Doodle poll would be appropriate to ensure maximum attendance.

Members may direct questions, ideas or articles to John Davis – john.davis@tpwd.texas.gov

APPENDIX

The following represents a list of items resulting from the meeting that require some action be taken in order to provide the working group with additional information.

1. Action Item: Staff to obtain a map of karst and an estimated percentage of the total land area of the state.

2. Action Item: Locate possible studies related to non-hydrocarbon chemicals (e.g., alcohol) with laboratory studies included.

3. Action Item: Gather data to determine the metrics of success for the Sweetwater Round Up. Sweetwater has contracted with a company to do a complete economic analysis of the event. Does success depend on the pounds of snakes? What is minimum poundage for a successful event? How does weather impact the number of pounds of snakes collected for the event?

4. Action Item: How are other states' festivals going since they don't gas?

5. Action Item: Gather data on possible bioaccumulation of contaminants in tissue, organs and/or venom of snakes exposed to gasoline or gasoline fumes.

6. Action Item: Dr. Eikenhorst plans to contact Anna Maria Castillo at FDA to gather information on their inspection process for snake meat destined for human consumption..

7. Action Item: How much antivenom is used/needed?

8. Action Item: Donna Boatwright will ask about rattlesnake bites data collection and query hospital association, etc. leadership to see if there's a way to gather that information. It is likely that insurance companies would also have such data.

9. Action Item: Research Anavip vaccine. This particular antivenom doesn't use western diamondback venom in its production. How much does Texas supply of western diamondback venom?

10. Action Item: Add Clark Adams to bibliography, and perhaps purchase his book on Rattlesnake Roundups for possible helpful info. Search for thesis on "human dimensions" work related to Round Ups and provide to the group if available.

APPENDIX 3: SNAKE HARVEST WORKING GROUP MINUTES FROM MEETING #2

SHWG Meeting Notes

Snake Harvest Working Group, February 11, 2015

Opening Remarks and Framing the Agenda

Introductions were given and housekeeping items were discussed. It was established that the goal of the meeting is to build fundamental knowledge of the Sweetwater rattlesnake roundup and to examine the venom industry as it relates to antivenin and vaccine production as well as medical research (Charge #1: Evaluate cultural and economic factors of roundups). Categories for measures of success were reviewed. The working group's charges were also reviewed. It was determined that the following charges were completed: #3. Review scientific data, #5. Review historic recommendations, and #6. Discuss potential implications for listings by the U.S. Fish and Wildlife Service.

A motion was made to accept last meeting's notes as final. The motion carried.

Thoughts or Questions from Last Meeting

Chairman Eikenhorst opened the floor to thoughts or questions from last meeting. Texas Parks and Wildlife Department (TPWD) staff reported on action items from the first meeting that had been completed as well as those for which due diligence had been applied yet no answer was found. Staff requested those items be marked as completed. The Chairman agreed. Action items from meeting 1 that remain in process include:

- Report on how other roundups are doing in the absence of gassing. (Mr. John Davis)
- Report on snakebites in Texas (number, cost, etc.). (Ms. Boatright)

Dr. Eikenhorst updated the group on the issue of potential chemical residue from gassing being found in snake meat served at the Sweetwater roundup. Ms. Boatright worked with Don Ware (local health official) and reported it is an issue under the jurisdiction of the Texas Health and Human Services Commission since the meat is sold in-state. She also reported that there were no regulations for the sale of snakes for consumption. TPWD staff indicated numerous studies have been conducted on mammals detailing the impact of benzene exposure, but no studies have been found indicating gassing leads to chemical residue deposition in snake meat. Ms. Boatright requested staff send her representative literature related to benzene exposure. Dr. Eikenhorst suggested that Sweetwater be allowed discretion to locally manage this issue.

Action Item: Send literature related to benzene exposure in mammals to Ms. Boatright – John Davis

Sweetwater Roundup Process (Discussion Led by Dennis Cumbie)

Action Item: Provide the group with a graphic illustration of the event process to help people better grasp the various aspects of the roundup. –Dennis Cumbie

General Information

The Sweetwater Rattlesnake Roundup is a festival consisting of multiple events occurring simultaneously. Various parts of the coliseum facility host different events. Entry to the grounds is free and with that free entry, one can participate in the carnival, flea market and other events open to the public. The gun show and the snake barn are the only two venues that require a ticket for admission. Attendance to the festival as a whole is not recorded. However, it was estimated that many who attend the event do not go the snake barn. By dividing the overall revenue generated by the entrance to the snake barn by the cost of a ticket, the Jaycees have been able to calculate an estimate for attendance in the snake barn each year. This estimate is inherently conservative due to the fact that some individuals are provided free tickets and children's tickets are reduced in price. The annual snake barn attendance is estimated to average between 30,000 and 40,000 with a record year reported for 2014.[1] Staff requested the attendance records for the snake barn for each year and it was agreed that the data would be provided.

Action Item: Provide snake barn attendance data to the group –Dennis Cumbie

Snake Hunting Process:

During later winter, teams of 4-5 hunters use a hand sprayer containing gasoline with 10-12 feet of copper tubing attached (crimped on the end with tiny holes punctured to allow gas and fumes to be released) to administer small amounts of gasoline along with fumes as far into snake dens as they can reach. It was reported that not everyone uses the exact same technique. Some hunters use more gas than needed. The "preferred" method is to turn the sprayer upside down so that it is mostly fumes and very little liquid being introduced. Snake hunters often send a person to the top of the ridge or formation they are working in case there are vent holes and snakes come out up top as the fumes permeate the den. It was reported that windy days can affect how the fumes behave in the den as they move through it. Once the den has been gassed, hunters back away and wait. It was reported that other species (mammals, invertebrates) are often seen leaving dens.

It was reported that the same dens are often gassed year after year and productive dens still produce snakes. This was used as evidence that gassing does not contaminate dens. Group discussion clarified that snakes were not the issue of concern. It was reiterated that gassing has consequences. More vulnerable karst species that are exposed to the gas / vapors are the concern and TPWD is charged with ensuring all species are conserved.

It was reported that snake hunters, in general, are an aging group with little recruitment of younger hunters. It was estimated that one hunter (Herb Hoover, age 70) collects 200-500 snakes a year "by himself" and that 90% of the snakes he brings in are collected using gas. It was reported that he is also known to only collect snakes larger than 2 feet in length.

The group questioned if other methods for snake hunting were used. It was reported that hunters can visit a den on a warm late winter day and many snakes will be out on the surface near the den entrance, but that most hunters are limited to hunting on weekends, so they can't rely on warm days and can't get that many snakes without gassing.

[1] Upon later clarification, it was determined that snake barn attendance is more correctly estimated at 20,000 – 25,000.

At the roundup, there are guided hunts that the public signs up for. On these hunts, participants must have a hunting license and sign a release. The hunters use their own vehicles to caravan to a property where they can hunt as long as they choose and can leave when they are ready. Snakes that are caught on these trips can either be kept by the individual hunter or sold to the Jaycees and most choose to sell to the Jaycees.

Collection and maintenance of the snakes:

As snakes emerge from dens, they are collected in various containers including buckets, sacks, specially designed snake boxes, etc. It was estimated that 90% of the snakes at Sweetwater's event are caught 30-45 days prior and kept in hunters' garages. It was indicated that most hunters don't want to keep snakes longer than 30-45 days since it requires feeding/watering them and cleaning up after them to avoid mortalities.

Sweetwater Roundup Check - In:

Though Jaycees are able to bring in snakes on Thursday the week of the event, no snakes are accepted from the public until Friday morning of the event. It was reported that game wardens are on site to check licenses as hunters bring snakes. It is common for only one person per team of 4-5 individuals to have a permit to collect and sell snakes. All of the team members let the one person with the permit register at the event and take all of the snakes in to be sold. Event organizers inspect what is brought in and snakes that are obviously sick, damaged, wounded, or "gassy" (can smell or see gas on them) are rejected. The group asked if emaciated snakes are accepted and the answer was yes, but snakes "close to death" are not. The total harvest from each hunter is weighed and poundage recorded. The Jaycees purchase the snakes from the hunter by the pound. The snakes are then put into the opening pit.

Milking Pit:

The first ~8,000 lbs. are taken from the opening pit to the milking pit 50-60 lbs. at a time. It was reported that about 8,000 lbs. is all they can milk over the course of the event. There is a group of 4 men including Mr. Cumbie who volunteer their time to work in the milking pit. Mr. Cumbie leads the group and coaches them on technique when they aren't doing things correctly. It was estimated that a snake produces an average of ½ cc (ml) per pound of body weight. The venom moves directly from the snake through a funnel into an iced container. Approximately every 45 minutes, the venom in the container is centrifuged and placed into dry ice to be frozen. Everything is cleaned and milking continues.

Research Pit:

It was reported that an average of 2,000 – 3,000 lbs. of snakes are selected at random from the milking pit or the opening pit to go to the research pit to be weighed, measured and sexed individually. According to their data, an average 3 foot snake weighs less than a pound while a big snake may weigh 5-6 lbs.

Processing Pit:

The bulk of the snakes brought to the event are sold live after the event to the buyer who won the bid for that year. However, it was reported that an average of 1,000-1,200 lbs. of snakes are processed on site each year. This process involves killing the snake, gutting and skinning it. The process begins with a person placing the head of the snake on a stump where an air gun / bolt gun is discharged to the head, incapacitating the snake. It was reported that this does not penetrate the skin or "mess up" the head, but simply serves to knock the snake out. The processors want the snakes alive when their throats are cut so they bleed out. Once the snake is incapacitated, its head is chopped off with a machete. This

process happens in public view. It was reported that a few years ago, the Jaycees moved this process out of public view due to complaints, but they indicated they got more complaints from people wanting to see it so they moved it back into public view. The heads are put on ice and go to the buyer who won the bid for that year.

Headless snakes are then gutted and the entrails are placed into containers. Most skins are removed and go to the bidder who won the bid that year. However, skins and raw meat of a few snakes are purchased at that time by individuals.

Display Pit:

Snakes that are not processed are deposited live into display pits for viewing. When the event is over, the buyer who won the bid for that year gets the live snakes (and all parts associated with the bid).

Event Economics

There are many factors that combine to determine the degree of economic success that each event experiences, but a general description of "averages" was reported to help the group understand the economic picture of the event. In general terms, there are expenses and income for each event. Losses in one area are compensated for in other areas. It was reported that although rattlesnakes are "the draw" for the whole event, the Jaycees often lose money on the snakes. Income from snakes is generated by a bid process where one buyer wins the bid to get all of the live snakes, rattles, heads, organs, skins, etc. from the event (minus a small number that are sold at various stages of the event as mentioned above). Maverick Trading Post got the bid for the biggest year. No live snakes are sold to the public.

Venom extracted at the milking pit is usually (but not always) purchased via a separate contract. The venom usually sells for $3-$5 per cc (ml) and the total income from venom sales averages $5,000-$10,000 per year. Bioactive Laboratories has purchased the venom for the last 10 years. It was reported that income from venom sales is not a significant contributor to the overall financial success of the event and that it would not be a big economic detriment to the event if venom were not sold. The group questioned whether the event needed to assume the risk of collecting venom if venom sales aren't a big money maker and it was reported that the milking pit is a popular thing that people like to watch.

The income from the sale of snakes is more than from venom. As mentioned earlier, it is believed the snakes are the draw for the whole festival. It was indicated that there is no way the event would draw the estimated 30,000-40,000 attendees without rattlesnakes. It is unknown which of the various aspects of the event draws the most visitors since there are no accurate attendance records overall. It was estimated that some (an unknown number) do not go into the snake barn, but attend other aspects of the event while others may primarily attend the snake barn.

The group questioned how many snakes are brought to the event each year and how many are required to have a successful event. It was reported that the total pounds brought in each year was highly variable, ranging from a high of ~17,000 lbs., to a low of ~1,600 lbs. with the average over the life of the event being ~5,600 lbs. per year. It was then estimated that a minimum of 4,000 lbs. was needed to have a successful event. The group asked how attendance at the event was doing in recent years and it was reported that attendance has been increasing with last year being a record setting year. One group member noticed from the handout listing total pounds brought in each year that the minimum of 4,000 lbs. was not achieved in 4 of the last 5 most recent years and questioned that minimum figure. The

response was that the event's success / reputation are not determined by any particular year, but by the yearly average.

It was reported that the total pounds of snakes brought in is directly tied to the price per pound that is paid. When the price offered is $2 per lb., the "serious" hunters will not put forth the effort to bring in snakes. Only the recreational hunters will. When the price offered is $10 per lb. the "serious" hunters will bring in hundreds of pounds.

It was reported that the overall economics of the event itself (not including the benefit to the community) can generally be described as the income / expenses from snake trading, vendor sales, expenses, etc. are a "wash" and often break even. The income from the gate (snake barn ticket sales) is profit. There were several figures mentioned in the meeting as being the average "profit" ranging from $39,000 to $240,000. Later discussions have clarified this to be at or around $100,000. The proceeds from the event are donated to various charitable events and organizations in the community.

It was acknowledged that this discussion was only covering the economics of the event itself and that the Chamber of Commerce has commissioned a full economic impact analysis to be undertaken at this year's event to ascertain the full benefit to the community. As part of that, it was suggested that the Chamber of Commerce analyze tax data for the roundup month over the years as one metric indicating economic value to the community.

Action item: Provide the group with an analysis of tax data during roundup vs. other times of the year. – Leah Andrews

Other Roundups:

There was discussion on other roundups and how they function. It was reported that all other roundups are very small compared to Sweetwater. Other event do activities not done at Sweetwater such as crawling into sleeping bags with snakes, sewing the mouths of snakes shut for photo to be taken with the snake, snake bagging contests, etc. However, it was reported that many other events are loosely connected with or impacted by Sweetwater in various ways. It was reported that the organizers of the Brownwood event don't buy snakes from hunters themselves. Rather the snakes at these other events are rented or purchased from the vendor who bought the snakes at Sweetwater weeks earlier. It was estimated that over 1,500 lbs. of snakes at events in Oklahoma last year came from Texas. Additionally, the same venom buyer (Bioactive Laboratories) that purchases venom at Sweetwater also buys venom from other events. Mr. Cumbie (the milking pit crew leader at Sweetwater) reported that he milks snakes (for Bioactive Laboratories) at events in Mangum and Waurika, Oklahoma as well as Big Spring and Brownwood, Texas. He reported making ~$10,000 from venom sales last year with Bioactive Laboratories buying 6 liters of venom last year.

Report of Correspondence with Venom Industry (Presented by John Davis)

Introduction

As part of the scoping process for the prohibition of gassing that was proposed in 2014, several concerns were voiced by stakeholders that pertained to the venom industry. These concerns include a potential impact to Western Diamondback Rattlesnake (WDR) venom supplies for vaccine and antivenin production as well as for medical research. To ascertain the possible impacts on the venom industry should gassing be prohibited, Texas Parks and Wildlife Department (TPWD) staff contacted various experts in the industry. TPWD staff (Mr. John Davis) presented a summary of the correspondence received from various sectors of the venom industry related to the potential impacts a gassing prohibition in Texas would have on the industry as a whole. [Please note that the term "crotalids" herein refers to species of the *Crotalus* genus.]

Key Players

The venom production industry is a relatively small, specialized one with the majority of trade passing through a handful of producers/suppliers/dealers. It seems fair to say that any major venom transaction in the U.S. will involve one of these suppliers (in no specific order):

- George Van Horn – Biotoxins, Inc. – St. Cloud, Florida
- Jim Harrison – Kentucky Reptile Zoo – Slade, Kentucky
- Carl Barden – MedToxin Venom Laboratories – DeLand, Florida
- Ken Darnell – Bioactive Laboratories – Gordon, Alabama
- Dr. Elda Sanchez – National Natural Toxins Research Center – Kingsville, Texas
- Nancy Haast – Miami Serpentarium – Punta Gorda, Florida (unable to establish dialogue with them)

In addition to the supply of WDR venom in the U. S., TPWD staff researched possible suppliers in Europe. There is a company (Latoxan) in France that produces WDR venom from its own captive colony.

Like the WDR venom production industry, the WDR venom consumption industry is also focused in some aspects (vaccine and antivenin production) with other aspects (research) being more diversified. TPWD staff learned that there is only one company (Red Rock Biologics) that produces the vaccine for WDR. Additionally, there is only one company (BTG International) that produces *CroFab*, which is the only FDA-approved antivenin for crotalids (including WDR). The field of venom research among academic institutions and biotech companies is more diversified.

Pet Vaccine

The dog and horse WDR vaccine is made by Red Rock Biologics (RRB). TPWD staff corresponded with RRB and learned that they only deal with firms which maintain a population of rattlesnakes under controlled conditions. The president of RRB (James Wallis) told TPWD staff that RRB is probably the world's largest consumer or rattlesnake venom. Further research revealed that the Kentucky Reptile Zoo is the primary (if not sole) producer of WDR venom for this company. In summary, a prohibition on gassing in Texas would have negligible if any impact on the WDR venom supply for vaccine production.

Antivenin

BTG International

BTG International is the producer of *CroFab*, the only FDA approved antivenin for WDR. BTG has a facility in Salt Lake City, Utah. TPWD staff corresponded with Heather Ambrose (Senior Manager) and Dr. Richard Straight (Facility Director).

TPWD received statements from BTG in 2010 and again in 2014 stating that BTG has its own crotalids and that venom is produced under strict laboratory protocols and outside sources cannot be used. TPWD heard feedback from stakeholders that WDR venom from Texas sources was making its way into the supply chain for *CroFab*. TPWD continued corresponding with BTG staff who explained that the company was not purchasing WDR venom from outside sources when they sent the first statement and again when they sent the second statement, but during an experimental stockpiling phase from 2011 through 2013, they did purchase WDR venom and that during that time it was possible that WDR from Texas sources entered their supply chain through a third party supplier to the company that has the contract with them (Biotoxins).

In January, 2014, BTG sent TPWD staff its revised purchasing terms and conditions. This revised document has a paragraph added stating that venom collected from gassed snakes or from roundups will not be allowed. Additionally, venom that has passed through the inventory of an individual or company that engages in gassing or roundups will not be allowed regardless of how it was collected. This document appears to be BTG's effort to ensure that venom from gassed snakes does not enter their supply for *CroFab* now or in the future. As a result, a gassing prohibition would not affect the supply of WDR venom for antivenin production.

Rare Disease Therapeutics/Bioclon

TPWD staff also learned that a new antivenin (*Anavip*) for WDR will be coming to the U.S. market in October of 2018. TPWD staff corresponded with Jude McNally of Rare Disease Therapeutics (the U.S. Company that will market the product). This product is made by Bioclon in Mexico and uses no WDR venom. As a result, the WDR venom supply is unrelated to the production of this antivenin.

Venom Availability for Research

To attempt to gain the clearest understanding of possible industry impacts should a gassing prohibition be implemented in Texas, TPWD sought feedback from the key suppliers as well as experts in the field of venom research. Additionally, TPWD sought feedback from biotech companies specializing in using snake venoms to develop pharmaceuticals.

Venom Dealers and Suppliers

- Biotoxins indicated that captive husbandry and other collection methods will supply enough WDR specimens for venom production should gassing be prohibited.
- The Kentucky Reptile Zoo indicated the need for WDR specimens to supply the market demand can be obtained without gassing.
- Medtoxin Venom Laboratories indicated that there would be no concern for supplying the market with WDR venom as long as other collection methods in Texas are allowed.
- Bioactive Laboratories indicated that there would be a shortage of WDR specimens collected from Texas should "gassing" be prohibited and the current collection permit requirements are not abolished.

- The National Natural Toxins Research Center indicated they do not accept gassed snakes and there is no shortage of WDR venom.
- Latoxan indicated they produce the venom they sell at their breeding center.

Venom Researchers

TPWD corresponded with venom researchers who provided feedback as well as various protocols for research venom that they consider as standards. TPWD contacted/corresponded with the following:

- Dr. Paul Reid, president of Celtic Biotech: Celtic Biotech produces CroToxin, a cancer tumor drug made from crotalid venom. Dr. Reid indicated that their venom comes from captive colonies. Gassed snakes (and/or the venom from them) are not allowed. He indicated that snakes must be kept in good health with proper care and handling and that they not be under stressful conditions.
- Dr. Bryan Fry, Director of the Venom Evolution Lab at the University of Queensland in Australia: Dr. Fry indicated that WDR is a large venom yielder that does well in captivity, so venom from that species is easy to obtain and plentiful from captive colonies. He also reiterated Dr. Reid's standard that venom for research must come from snakes in good health. He indicated venom is affected when snakes are emaciated or dehydrated. He revealed that snakes producing venom for research must have known geographic localities due to variations in venom composition within a species.
- Dr. Zoltan Takacs, a venom consultant with the National Geographic Society and owner of a designer toxin biotech company that specializes in using snake venoms to develop pharmaceuticals: Dr. Takacs indicated research using WDR venom is comparatively limited now when compared to the past. He indicated that WDR venom is sufficiently supplied by captive colonies and that the industry standard has shifted away from large volumes of crude venom to isolating components of a particular venom and producing it synthetically.

Conclusion

As a result of correspondence with multiple sources in the venom industry, it is expected that prohibiting gassing would have limited (if any) impact on the supply of WDR venom for vaccines, antivenin, or medical research.

Q&A on Venom Industry Correspondence

A member of the group questioned the reported correspondence with the venom industry. He indicated that the companies previously referenced may not want to admit they are buying venom from gassed snakes. He also indicated that companies like BTG can say they aren't ordering WDR venom at a particular time because they place huge orders every few years then "sit on" that venom. Dr. Eikenhorst clarified that some may disagree or choose to dismiss the information shared in the correspondence, the fact remains that companies have provided their policies and documentation that the group cannot ignore.

There was discussion about *Anavip* and its potential impact to the antivenin market when it comes to the U.S. in 2018. It was generally accepted that competition in that market would be good for health care and costs at that point.

A member of the group asked why researchers and antivenin / vaccine producers won't use venom from gassed snakes. Was the issue one of quality of venom or animal rights? Mr. John Davis responded that the reasons he'd received through his correspondence were varied and included venom quality as well

as animal welfare standards. Others cited the lack of isolated samples of venom from individuals of known geographical location as making venom collected at roundups useless to them.

A member of the group asked if the experts in the venom industry had voiced an opinion on the practice of gassing and if so, what the responses were. Mr. John Davis responded that all but one (Latoxan) of the individuals / companies he contacted offered an opinion on gassing. All oppose the practice. Like the reasons for not using venom from gassed snakes, their opposition was based on a variety of reasons ranging from impact to the environment to animal welfare concerns (inhumane collection method).

Group Discussion

Group discussion covered a variety of topics as well as housekeeping issues.

There was discussion on the economic study being undertaken and TPWD's Nature Tourism Coordinator (Shelly Plante) agreed to work with Ms. Andrews to help Sweetwater get the most useful information from its surveys as well as determining the best way to market the event to ensure future success. There was also discussion on upcoming charges that will be addressed in future meetings and what resources / experts are needed to best address them. The details of the next meeting were touched on with the timing determined by the results of the economic study being available.

Recap, Wrap up and Next Steps

Dr. Eikenhorst allowed participants to offer final thoughts.

Most offered general wrap up statements. A member of the group indicated there was a simple fix to this issue. He suggested restricting gassing and gave examples of only allowing gassing a particular den every other year, or regulating the amount of gas that can be used per den by square foot or per acre. Mr. Kevin Davis indicated an interest in altering current regulations and/or permit requirements to increase opportunity for hunters who aren't participating now to participate.

Action Items

- Action Item: Send literature related to benzene exposure in mammals to Ms. Boatright – John Davis
- Action Item: Provide the group with a graphic illustration of the event process to help people better grasp the various aspects of the roundup. –Dennis Cumbie
- Action Item: Provide snake barn attendance data to the group –Dennis Cumbie
- Action item: Provide the group with an analysis of tax data during roundup vs. other times of the year. – Leah Andrews

APPENDIX 4: SNAKE HARVEST WORKING GROUP MINUTES FROM MEETING #3

Snake Harvest Working Group – Meeting 3 Notes

May 12, 2015, 10:00 – 3:00

Early Chamber of Commerce, 104 East Industrial Dr. Early, TX 76802

Working group members in attendance: Bill Eikenhorst, Terry Hibbitts, Ken Becker, Dennis Cumbie, Leah Andrews, Billy Wright, Rob Denkhaus

Working group members on the phone: James Wright, Don Steinbach

Working group members not present: Donna Boatright, Don Roeber, Kaleb McLaurin

TPWD staff facilitators present or on the phone: Clayton Wolf, John Davis, Jeannie Muñoz, Carla Beavers, Megan Russell, Shelly Plante, Kevin Mote, Dale Prochaska, Kevin Davis

Introductions and Approval of Notes from Previous Meeting

The group went through introductions as there were two visitors from Texas Parks and Wildlife Department (TPWD) (Dale Prochaska and Kevin Mote) sitting in on the meeting. There were several items brought up for discussion from the previous meetings and the meeting notes were approved with limited edits.

Economic Analysis of Sweetwater Roundup – Leah Andrews

The results from the economic impact study done by Sarah Page have been given to the Sweetwater Chamber of Commerce in draft form. The final report is not available at this time, but will be shared with the working group when it's available. Leah Andrews presented an overview of the draft document. She indicated that the total economic impact for the region was $8.4 million. $3.3 million was related to hotels, $1.7 million was related to retail sales, $3.4 million was related to food/beverage, and $72,000 was related to transportation. The study defined "local" as within the zip code of Sweetwater. Anyone outside of that was considered non-local. The report indicates that most of the economic impact comes from non-locals, some of whom came from other countries. It was estimated that 32% stayed in Abilene hotels, so the impact is regional for certain. There was discussion about this regional impact opening the door for sponsorships and other marketing opportunities. There were questions from the working group about the number of vendors at the event and it was reported that that number was not captured in the economic study, but it is likely that the town could get about 80% of that data if need be.

The working group asked questions about the survey conducted in an effort to best understand what aspects of the event are the most attractive to visitors and, therefore, result in the best attractants for tourism. It was reported that the study surveyed visitors in the snake barn and did not survey visitors attending other aspects of the event. The survey was conducted via emails sent to participants following the event. Since the report is in draft form, few survey details were reported. However, it was indicated that snakes are what bring people to the snake barn. Some like to see the skinning pit, some don't. Some like to eat the meat, some don't. Of the people surveyed, the responses tended toward enjoying various aspects of what happens in the snake barn. The survey estimated snake barn attendance for 2015 to be 25,000.

11:45-12:30 Lunch

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Report on Other Round ups – John Davis

TPWD was asked to provide a report on how other rattlesnake events were doing. Mr. John Davis presented the results of data gathered by contacting event organizers, mayors, and chambers of commerce for as many active rattlesnake events as could be found. Rattlesnake harvests or bounties have been recorded in the U.S. as early as the 1700s. Texas has had a total of 44 communities that have held rattlesnake events. Many of those events no longer occur. A total of 25 events in 6 states remain active in the U.S. (Texas, Oklahoma, Georgia, Florida, Alabama and Pennsylvania). Nine communities in Texas still host rattlesnake events, although the futures of the events in 2 communities are in question. Mr. John Davis contacted 21 of the 25 events nationwide and gathered data on various aspects of the events. Not every event provided information in all categories, so the analysis reflects that. He presented this information to the group by way of a word document containing all of the contact information and notes, an Excel table comparing various aspects of the events, and a PowerPoint presentation graphically presenting key points of the research. The PowerPoint presentation was organized to compare events by various metrics of success. These metrics include longevity, diversification, harvest, estimated attendance, stability of attendance, factors affecting attendance, profit, number of vendors, etc.

The data gathered from events revealed a diversity of components across the nation. There were 20 events that provided data related to processing and milking snakes at the event. Eight events process snakes, 11 do not, 1 processes some snakes only for demonstration purposes. Four of the events milk venom as a regular part of their event, 14 do not, and 2 milk snakes only for demonstration purposes. There were 20 events that provided information related to the diversity of components (other than rattlesnakes) offered at their event. The data ranged from 0 to 5 or more other components. Forty-five percent of the respondents indicated they offer a carnival. Forty percent offer concerts or other entertainment acts. A flea market, run, or pageant is offered at twenty percent of the events. A vehicle race is offered at fifteen percent of the events. Other events, such as softball tournaments, cook-offs, etc., are offered at ten percent of the events. The data from events was plotted as diversification vs attendance and profit respectively and it was found that there is a statistically significant positive correlation between diversification and the attendance as well as profitability of an event. Attendance is higher at events that are more diversified. This also leads to higher profitability.

Success could be measured by longevity and the trajectory of attendance. Most of the active events have been around for over 30 years with the oldest starting in the 1930s. Attendance is highly varied, ranging from a few hundred to an estimated 60,000 people. Attendance at ninety percent of the events was stable or increasing indicating sustained popularity. Often, these events are held in small communities so some communities realize a 3,000-4,000 percent increase in population due to their event.

Another metric of success could be the pounds of snakes harvested. This metric is only applicable for events that harvest western diamondback rattlesnakes (WDR) since events harvesting eastern diamondback or timber rattlesnakes have never produced large numbers. The harvest ranges from a few hundred pounds a year to over 5,000 with an average across WDR events of 1,860.

Nineteen events provided data on the primary factor that affects attendance. Sixteen indicated weather was the primary factor. Two indicated snakes were the primary factor. One indicated marketing/advertising was the primary factor.

Sixteen events provided data related to profit brought in by the event. Three events indicated they break even with two of the three indicating they hold the event to simply stimulate tourism in the community. Thirteen of the events make a profit with estimates ranging from $2,000 up to $100,000.

The average of those events making a profit is $21,000. Figuring into these profit figures is the estimate of vendors at events. Fifteen events offered estimates of vendor numbers ranging from 0 to 250 with the average being 86.

The overall results of the research indicates that there has been a decline in the number of rattlesnake events over the years, but those that remain have found ways to diversify and sustain popularity over time.

During the discussion following the presentation, one member disputed the data and suggested that the event organizers and community leaders were inflating their numbers. However, the overarching message that remaining rattlesnake events are stable or thriving was not disputed.

Group Discussion – Led by Dr. Bill Eikenhorst

Dr. Eikenhorst opened the discussion session by saying that the group was purposefully composed of members with varying perspectives and backgrounds. As a result, divergent opinions, rather than "group think", are to be expected. Though there have been several members of the committee who've presented information over the course of meetings, there are many members who have been silent and they deserve an opportunity to express themselves. As a result, Dr. Eikenhorst gave members of the group the opportunity to provide their perspective while reasserting that the TPWD Commission (not this group) will make the ultimate decision on whether to regulate gassing. Dr. Eikenhorst distributed a copy of a letter that Don Roeber sent detailing his perspective on the data presented and the issue of gassing. He encouraged all of the SHWG members to write something similar to be included as an appendix to the final report. The letter from Mr. Roeber was the starting point for group discussion.

Don Roeber (via Dr. Eikenhorst) – Mr. Roeber provided his perspective via a written letter to Dr. Eikenhorst prior to the meeting since he knew he would not be there. Dr. Eikenhorst distributed copies of that letter. Here is a paraphrase of the contents in the letter:

> *Mr. Roeber believes there is no compelling reason to continue to allow gassing. The science presented demonstrates that gassing is damaging to karst systems and the animals that reside in them. He is concerned about the effects of this damage on rare species and the risk of future listing impacts. He believes there is no compelling argument that rattlesnake roundups provide a significant amount of venom to the antivenin or medical research industry, so a ban on gassing would have no impact on the industry. He believes that other collection methods (collecting snakes sunning at the mouths of dens, use of funnel traps, etc.) are able to provide sufficient numbers for events and that by moving the dates to later in the year, these methods could be made even more effective. He cites that the number of snakes collected or displayed has no bearing on snake event ticket sales, so the funds brought in by an event will not be impacted. As a result, the Department should set forth regulations that no longer allow gassing.*

James Wright – Mr. Wright's perspective is that the issue reverts back to money. TPWD has demonstrated that when dens are gassed. All creatures in the dens are exposed to benzene and toluene. He has gassed dens himself and has witnessed various creatures (including invertebrates) evacuating dens after being gassed. He no longer gasses dens, nor do the 2 teams of guys who collect snakes from his property. They have been collecting snakes for 35 years (collectively) and voluntarily stopped using gas because the residue discourages snakes from coming back to those dens. As a result, this makes it more time consuming and costly to continue to find new dens from which to collect. They have found that it's more cost effective to pick up snakes at the mouths of dens when the weather is right in February and March. Mr. Wright disagreed with a statement said in an earlier meeting that if gassing is prohibited, Sweetwater's event will be shut down. He said it will change the way snakes are collected, but he does not believe it will shut the event down. He went on to provide background about

his professional experience in consulting. It was his company's job to interface between the oil and gas industry and the Texas Commission on Environmental Quality (TCEQ), the Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), TPWD, landowners, and animal rights groups. His company's job was to document the impacts on wildlife resulting from exposure to petrochemicals during oil and gas operations and develop plans to correct the problem. He indicated the only argument he's heard from Sweetwater is that they need to continue gassing because of tradition (over 50 years) and because they fear they will lose money if they stop. He indicated that the SHWG is a friendly group that is willing to try to resolve this issue in a reasonable way. He said this issue has been debated for years, but that no one disagrees that when you gas snakes it hurts animals. He understands that there is a sizeable economic benefit to Sweetwater from their event and that folks need that event to survive. He encouraged Sweetwater representatives to listen to what the rest of the group is saying and compromise to figure out a way to sustain the event for the future. He expressed his belief that if one of the other groups he mentioned were to come in, they'd shut the event down and not go through this involved process to try to find a workable solution.

Dr. Don Steinbach – (represents the Texas Chapter of the Wildlife Society). The impact that gassing has on non-target species is the issue. He agreed with Mr. Wright in that the issue of threats to rare species and listings is concerning and trying to avoid that process is wise since it is heavy regulatory process guided by the USFWS. He supported finding middle ground that allows the Sweetwater event to continue in a revised fashion while removing the impact of gassing on non-target species. He hoped that Sweetwater's survey would provide data on the actual motivations of tourists to attend and that that information could be used to improve the event. He believes the SHWG's role is to provide the TPW Commission with guidelines for a solution that allows the event to continue to be successful while addressing the gassing issue such that it keeps more heavy-handed regulatory agencies out of the process.

Terry Hibbitts – Mr. Hibbitts stated that gassing is indiscriminate and affects not only snakes, but all of the other creatures in those dens and crevices. He was a biology teacher and believes that all animals have a role or a niche. That niche may be very specific and many of the really specific ones are good indicators of ecological health. He went on to explain the food chain and the importance of maintaining links in that chain. He explained the importance of invertebrates to the overall food chain. He said gassing has an indirect effect on humans. TPWD is charged with managing all Texas wildlife and their habitats and to set regulations for seasons and collection methods to protect species. He mentioned methods of take that have been prohibited because of the impact to species (spotlighting deer, electrofishing, using dynamite to fish, etc.). They have to look at all of the effects of a means of collection. He went on to express support for prohibiting gassing. He acknowledged that collecting snakes at mouths of dens on warm days is not as convenient as using gasoline, but it can be done.

Ken Becker – He indicated that one of the good things that has come out of this process is the economic impact study. They have needed to do that for years and simply never had. He also stated that he feels like Sweetwater has had a target on their back through this process. He cited the presentation from earlier in the day where data from other events was gathered over the phone by taking someone's word, but that Sweetwater has been asked to provide data to support statements. He stated that folks assume that gassing is hurting animals when there are not enough studies to know. He discussed the difficulty of changing the event's date and the uncertainty of weather allowing for collection (given that the second weekend of March could be 80 degrees or freezing). He said he realizes he is biased since he's lived in Sweetwater for over 30 years and sees this issue from that perspective. He questioned why there was discussion of the event's economics at all. He said if gassing is a bad thing as is being reported, then the economics should not come into play so he was frustrated with how the economics of the event continues to come up in discussion. If gassing is a bad thing, then it should not matter how much

money a community makes off of an event. Dr. Eikenhorst responded at that time that the group who established the charges considered the preservation of the economic vitality of the event to be very important. It's not that making money is bad, but rather that economics should be considered such that recommendations from the group have the least economic impact and may even make the event more profitable. Mr. Becker said that he appreciated Sweetwater and Nolan County being included in the process because of the economic importance of the event.

Dennis Cumbie – Mr. Cumbie referenced Mr. Roeber's letter and questioned whether there was any pressure from USFWS regarding gassing and western diamondback rattlesnakes (WDR). It was clarified that there never has been concern for WDR and that the concern has been over the impact to other species that are found in the same karst features. Mr. Cumbie then brought up the venom industry and stated that there were only 3 people in the country that know more about venom than he does given his experience. He recommended dismissing the correspondence with the venom industry as the correspondence from them is not truthful. He stated that Mr. Ken Darnell has been buying 99% of the WDR venom for the last 10 years or so and that Mr. Darnell has retired and Mr. Cumbie is now in the venom business. He indicated that the business could be called "shady" or "black market", but he is in negotiations with 2 companies to buy venom from him but he is not allowed to disclose who they are. He submitted that the venom companies are not lab-producing venom like they say they are. He then restated that without sizeable roundups, there will not be enough WDR venom to make antivenin. He said that the companies buying venom don't want the public to know where it comes from. Mr. Cumbie then referenced Mr. Hibbitts' comments about impacts and stated that there is not a study in Nolan County demonstrating the damage that gassing is doing. Mr. Cumbie agreed that gassing is bad. He stated that everyone knows gassing is toxic and terrible for the environment, but it's an acceptable risk like many things we do every day (driving a car, producing garbage, runoff from farming/ranching operations, etc.). There are no studies showing what species are in those dens and the amount of area in Texas where gassing is applied is minute when compared to the size of the state, that he does not believe they are affecting anything. Mr. Cumbie went on to express disappointment that no one from the committee came to the roundup this year. TPWD staff clarified that several staff have attended in recent years and that two staff from Marketing (Shelly Plante and Eddie McKenna) attended this year. It was also clarified that Law Enforcement has game wardens at the event each year. Mr. Cumbie continued that he's hunted snakes most of his life and gassed dens year after year and still gets snakes out of those dens.

Leah Andrews – Ms. Andrews agreed with Mr. Cumbie in that she believes the amount of damage being done by gassing is minimal. When compared to landfills or high game fences, the impact to wildlife is negligible. She feels like the whole discussion is based on a fear of what might happen. She stated that she does not feel actions should be taken based on fear. It seems to her like this is overreach by big government and was brought on by a petition signed, in part, by people out-of-state who don't live in west Texas where people live in constant fear of rattlesnakes. She gave an example of a child who was bitten outside a restaurant recently and now the state is trying to implement what feels like "big government" rules. She doesn't feel that is the way Texans should be. She went on to say that as a mother, she is very concerned for the safety of children (hers and others). Others who live elsewhere don't understand the worry of a child potentially being bitten. She said she wouldn't presume to make rules for people in Dallas, so she doesn't understand why others are trying to make rules for Sweetwater. Dr. Eikenhorst commented that most everyone in the room is a Texan, but we all have different perspectives. He wants the group to ensure that it creates a Texas solution for Texans. Ms. Andrews wrapped up her comments by saying that she felt the composition of the group was not in Sweetwater's favor with so many TPWD staff in the room and only 4 representatives from Sweetwater. Dr. Eikenhorst responded by saying he is involved in a lot of groups and regulatory processes with TPWD and he's not aware of another group that has been as diverse as this one. This group has

representatives from many user groups as well as a large representation from Sweetwater. As such, he considers it a balanced group. He also reminded the group that the Commission will be making the final decision and that it's the group's task to analyze the issue and provide recommendations. TPWD staff clarified that they are in the room simply to facilitate the process and are not actual members of the working group.

Billy Wright – Mr. Wright indicated that the first 4 measures of success on the agenda (preserve/enhance economic vitality of snake events, preserve heritage of snake events, protect human health, protect antivenin supply) trump the last measure of success (avert future federal listings). He believes that humans are the most important concern and he is not inclined to worry about the impact to obscure critters in dens with rattlesnakes. He is more worried about impacting snake festivals and their economics / heritage. He doesn't want to pass a law when he believes there is no public outcry. He feels this debate is trying to find a solution to a problem that doesn't exist. He also stated that if a prohibition is implemented, it should only pertain to karst features. He reasoned that if the main concern is for karst features, then any regulation should reflect that and be limited to karst features and should not include burrows or man-made structures. TPWD clarified that the regulatory language proposed in the past included burrows as well as karst features as a concern, but that man-made structures have been exempt from the proposed regulation.

Rob Denkhaus – Mr. Denkhaus said his background led him to come to this process with his decision basically made. He stated he knew WDRs were doing fine and were not a concern despite gassing. Snake populations were not an issue at all. He also stated he knew that pouring gas (or fumes) into the ground wasn't good even if it's done in small quantities. The thing that he came into the process knowing the least about and being the thing he was most willing to learn about was the roundups themselves. The antivenin issue was laid out and TPWD's presentation featured 10-12 companies from several countries claiming that they do not use gassed snakes and should gassing be prohibited, it would not impact the production of antivenin. Mr. Denkhaus acknowledged that Mr. Cumbie disagrees with that information, so that issue could be debated endlessly. Regarding snake bites, he stated he understands safety concerns, but since gassing has been going on for so long, there isn't data to compare bite occurrence with and without gassing to determine if there's a difference. Regarding roundup viability, the critical missing data is how many snakes are needed for a successful event and whether or not that number requires gassing. To him, just seeing enough snakes in one place to have him leave with a "That was a bunch of snakes!" reaction would be enough for a successful event. However, he stated we don't know that number either, so there are holes in the data. So, for him it goes back to a quote from Aldo Leopold that says, "The first rule of intelligent tinkering is to save all the parts." He believes it is a mistake that we cannot correct if we proceed to eliminate something, even if it's something we may not know exists in those places. He feels there are other ways to manage snake populations without gassing and that we just cannot gamble on eliminating a species (by gassing) because of the future risk that poses.

Dr. Eikenhorst asked the group if there were any final thoughts about the "personal perspective" section of the meeting and Mr. Clayton Wolf addressed the issue raised by Ms. Andrews and Mr. Becker about the group dynamic. Mr. Wolf said that TPWD could have opted for a group composition that was less diverse in opinion, but that that wouldn't have been an accurate representation of the perspectives on this issue. There are divergent opinions regarding this issue and this group represents that. He explained that he's seen in other groups the human nature for a group on one end of the spectrum to feel like the "cross hairs are on them" when others with opinions on the other end of the spectrum ask critical questions. To him, that type of interaction is evidence that this group has broad representation of opinions. He encouraged the group to be patient with the process as there will likely be more differences of opinion as the group moves forward. Each member was picked because it was felt that

he/she could work with others who hold a different opinion and look for common ground and develop solutions.

Dr. Eikenhorst then opened the floor to group discussion by saying there is not always a solution, but sometimes the best that can be done is to find a resolution. He encouraged the group not to be looking for a single solution, or that will result in disappointment. He stated that he wanted to ensure that people in the direct human/snake interface are protected, so he suggested concepts that he felt the group could all agree on. He elaborated that if you put aside the issue of "do we gas or don't we" and view this as a human / wildlife conflict issue would it be possible to develop a recommendation to the Commission that would address that? He expressed his confidence that it was never the intent to prohibit gassing in all cases. He is confident that the previously proposed regulation would have allowed gassing under and around man-made structures, etc. He asked for clarification that even an artificially created den would have been legal to gas according to the most recent proposed regulatory language. TPWD staff confirmed that.

The question was asked how the process will work and what will happen to the report that the working group will provide to the Commission. Mr. Wolf explained that the report will be presented to TPWD's Executive Director, Carter Smith, who will share it with the Commission. That group is a 9-member panel of individuals appointed by the Governor. He went on to explain that for any regulation proposal there is an established public comment period, after which the Commission renders their decision. TPWD staff implements the final rules.

Dr. Eikenhorst then sought consensus from the group to provide a strong recommendation that gassing should be allowed around structures and areas where there is direct, proximate human / snake interaction. One member stated he didn't think there was agreement on anything and expressed concern that agreeing to allow gassing around structures would, by inference, mean he agreed with prohibiting gassing elsewhere. Dr. Eikenhorst insisted that was not the case and that the report will likely have multiple recommendations with many of them being independent of the others. So agreeing to one recommendation does not infer the converse. Dr. Eikenhorst asked the group if there was anyone who felt the recommendation should be that gassing should be prohibited around man-made structures or the direct, proximate human / snake interface. There was unanimity in not recommending prohibition in those instances. A discussion ensued about the definition of the proximate human / snake interface and that the term may mean something different to a landowner on his ranch than it does to a person living in a city. A member questioned why the group was discussing exemptions to something that the group hasn't even decided on yet. Dr. Eikenhorst explained that he is simply trying to get the process started to arrive at recommendations and asked for help if anyone felt he was approaching it the wrong way. He perceived from what group members have said that all seem to want to ensure human health and safety so he's trying to arrive at a statement supportive of that on which the group can agree. At that point, there was group agreement. Another member suggested a statement indicating that the impact of gassing was so minute that it's not affecting anything. Dr. Eikenhorst asked if there was support for that. There was not group agreement on this point. The discussion then moved to the utility of an action vs. the risk. The example was given that electricity kills people, but we still use it because the utility outweighs the risk. Dr. Eikenhorst agreed with the utility example but stated that those things are regulated. Mr. Kevin Davis then discussed the various regulations that TPWD has in place and suggested that there are opportunities to relax existing regulations enhance the ability of individuals to legally harvest snakes and provide incentive for hunters to collect snakes and bring them to events. Mr. Cumbie said that the permit requirements were not a big deal, so relaxing those requirements would not be very impactful. He indicated there are only 25 hunters "on his list" and even if permit requirements could be relaxed, there are many people who should not try to collect snakes and that people are going to do what they do. Some will kill snakes and

some will collect snakes no matter what changes in permits are made. However, it was also mentioned that when the permit went into effect and game wardens were at their event checking paperwork, they lost a lot of hunters due to what he described as a general aversion to law enforcement.

Mr. Becker indicated that he supported Mr. Kevin Davis' ideas of looking at the current permit requirements and trying to find ways to make it easier for individuals to sell snakes. Mr. Becker was involved as a stakeholder in the team that developed the permit requirements that are in place now and would like to see them reexamined to facilitate collection today.

Mr. Cumbie stated that the hunting license requirement was more of a barrier than the permit since they conduct hunts with the public and folks from out of state have to go and get an out of state license, etc. Another factor that limits the number of hunters that contribute to their event is the requirement that all hunters must pay a registration fee to the roundup to sell their snakes to the JayCees at the event. But he is unsure how much of a positive impact on increasing hunter numbers that any of the measures being discussed would have. He indicated that snake hunting is hard work and a "fad" type of activity for most folks (like running) and changes in permits or regulations won't likely change that. He also stated that one of the biggest barriers to increasing the number of snake hunters is access to property due to the increase in land holding size and absentee landownership. Also, it used to be that landowners would let snake hunters collect as many snakes as they wanted. It is now common to have a landowner deny access.

Dr. Eikenhorst asked if there are more actual hunters than the 25 on Mr. Cumbie's list. Are the hunters on Mr. Cumbie's list serving as an interface between the JayCees and other, smaller volume hunters? Mr. Cumbie indicated that he tried to survey hunters this year with questions like that, but very few cooperated and provided answers. Mr. Kevin Davis asked for a general estimate of the number of hunters that get snakes from others and sell them to the Jaycee's. Mr. Cumbie said you can tell by the volume of what they bring in. He said of the 25 hunters, 5 guys provide 75% of the volume they get.

Mr. Kevin Davis wrapped up his statements by saying he believes that if TPWD can provide more avenues for individuals to lawfully provide the JayCees with snakes, the number of hunters and the resulting take of snakes would increase. Mr. Cumbie responded that the only way to know is to make the changes in the regulation and see. The question was asked if we should have a rattlesnake stamp like a waterfowl stamp. Mr. Kevin Davis clarified that to do that would require legislation and not simply Commission regulation. Dr. Eikenhorst suggested that the concept of revisiting the nongame permit requirements to facilitate collection seemed to be a point of group consensus.

The discussion then turned to ways to elevate the data collection aspect of rattlesnake events overall. One way to gather more data is through the permitting and reporting process, but this is currently not a rattlesnake specific permit. Representative King has indicated she'd like to see more data gathering to make the events more useful to science. The JayCees currently record various measurements, but TPWD staff stated that without location data, the utility of the other data is extremely limited and of little biological significance. It was suggested that increasing the utility of any data taken should be a goal and asked the group if there was any opposition to that. There was group consensus in favor of this suggestion

The discussion then moved to ways to enhance the event and the use of TPWD's resources to help. Ms. Shelly Plante indicated that much of the messaging that is presented at the event is consistent with TPWD messaging and the concept of use of wildlife for consumption, etc., is also consistent. Mr. Clayton Wolf indicated that this common ground has been shared with Carter Smith who also shared it with Representative King. There are many areas of agreement between TPWD and the Sweetwater event.

However, the use of gasoline to collect snakes remains the one area of misalignment. TPWD and the Sweetwater event are allies in the sustainable use of wildlife and the group needs to capitalize on that. Other improvements like an electronic kiosk were suggested. The school engagement that the JayCees are doing was also mentioned. Overall, there was group consensus regarding the idea of TPWD being more of a partner in the event as experts rather than having TPWD viewed as the enemy.

Dr. Eikenhorst - After several apparent points of consensus, Dr. Eikenhorst opened the floor again to return to the issue of gassing. One member said that he was against prohibiting gassing, but if a regulation were to be passed, it should be limited to banning gassing in karst features. Another member asked the group if anyone disagreed that exposing animals to benzene and toluene (gas vapors) is harmful. There was no disagreement in that statement but one person indicated that the damage occurs on such a minute area of the landscape that it's insignificant. Others disagreed with that.

The discussion moved to the inclusion of burrows in the regulatory language of previously proposed rules. Though burrows were always considered, TPWD emphasized karst features in the presentation to this working group because that is often the most misunderstood aspect. How other states prohibit gassing was discussed and it was established that they do not distinguish the two but prohibit the practice completely. So the working group may consider "layers" of recommendations that allow for nuance. Dr. Eikenhorst asked the group if there was objection to the recommendation of limiting a prohibition of gassing to karst features. A member objected saying that the map of karst topography in the state covers the places where there are snakes. The specificity of karst maps was also discussed as well as the difficulties of enforcement, but no conclusions were made. The concepts of allowing gassing during a certain time of the year or restricting the amount of gas were discussed, but no conclusions were made. It was established that snakes are only gassed during a particular part of the year (December through March with the majority in February and March), so that limitation already exists on a very practical level. One member stated that the concept of restricting the amount would likely not be workable due to the fact that the amount needed to evict snakes from dens is lethal to other species. TPWD staff also indicated the difficulty with enforcing gasoline volume restrictions. One member summarized these suggestions collectively by going back to the fact that regardless of season or amount, one is still putting noxious substances in the ground and impacting the environment and species in the den. The discussion then focused on the level of risk that is "acceptable." There wasn't consensus on that point.

Dr. Eikenhorst reviewed future tasks necessary to accomplish the work of the SHWG. .There will be a final meeting and a report that is due September 1, 2015. It was reiterated that the report will likely not be one recommendation that satisfies everyone, but will likely consist of several recommendations and various strategies for implementing those recommendations over time, etc. TPWD staff handed out a rough list of topics that have been covered over the course of the SHWG meetings and asked that comments regarding something missing be sent either to Jeannie Munoz or John Davis. TPWD staff will begin pulling things from the meeting notes and putting the report together in draft form to the extent that items have been covered. Recommendations have not been decided upon, so those will be agreed upon as the process continues. As sections of the report are prepared, they will be sent out for review. Minutes from this meeting will be prepared and sent out. There will be a Doodle Poll for the next meeting date. It was confirmed that the current meeting location was good for everyone. Dr. Eikenhorst asked for a move to adjourn.

Mr. Ken Becker motioned to adjourn and **Ms. Leah Andrews** seconded that motion. Meeting was adjourned at 3:07pm.

APPENDIX 5: SNAKE HARVEST WORKING GROUP MINUTES FROM MEETING #4

SHWG Meeting 4 Notes

Snake Harvest Working Group, September 2, 2015

ATTENDANCE

- **Working Group Members in ATTENDANCE (8):** Dr. Bill Eikenhorst (chairman), Leah Andrews, Donna Boatright, Dennis Cumbie, Rob Denkhaus, Don Roeber, Billy Wright, and James Wright.
- **Working Group Members VIA Conference Call (1):** Don Steinbach *(joined early during the Points of Consideration discussion)*
- **Working Group Members NOT** PRESENT (3): Ken Becker, Terry Hibbits, Kaleb McLaurin
- **Legislative Staff Liaison:** Bryan Law
- **TPWD Staff:** Carla Beavers, John Davis, Kevin Davis, Jeannie Muñoz, Dale Prochaska, Matt Wagner
- **Elected Official:** State Representative Susan L. King and her assistant, Robyn Wertheim *(joined the meeting at the end of the day for closing remarks)*

OPENING REMARKS

Dr. Bill Eikenhorst, Chairman, called the 4th SHWG meeting to order. Matt Wagner (Deputy Director of Wildlife Division) sitting in for Clayton Wolf, introduced himself. The Chairman framed the agenda for the day. In addition to discussion of the draft final report and the points of consideration to be integrated into the report, the working group would discuss the timeline for inputs/edits into the document and determine firm dates for completion of the final report.

THOUGHTS/QUESTIONS FROM LAST MEETING

Chairman Eikenhorst opened the floor to thoughts or questions from the last meeting and/or the meeting notes. Hearing none, the notes were accepted as final and the team moved to the next agenda item.

DISCUSSION ON DRAFT FINAL REPORT

Dr. Eikenhorst opened the floor for discussion about the draft report in its current form and various members provided feedback / perspectives.

John Davis talked about the draft report. He is in the process of incorporating feedback from the group (i.e. add a table of contents, executive summary, public hearing details, appendices and the Executive Summary of the Economic Impact Study and expanding on HB 763.)

There was discussion on HB 763 (51% of petitioners must be Texas residents for a state agency to be required to respond). Some in the group thought that if a regulation is going to be made, the impetus shouldn't originate from out of state.

There was discussion about the petition process at the time the petition related to snake gassing was received. It was explained that the Commission must respond to all petitions. TPWD staff analyzes each petition to determine which of several responses to recommend to the Commission. If the information in the petition is determined to be without merit, TPWD may recommend denying the petition. If the information in the petition is determined to have merit, TPWD staff may recommend the petition be considered. Once the staff recommendation is made, the Commission then determines how to proceed.

There were questions related to the position of the Texas Conservative Coalition. It was clarified that they opposed the proposed rule.

There was discussion regarding items that may be missing from the current draft of the report and a suggestion that the report contain the Sweetwater Economic Impact Study in its entirety. There was concern expressed about the technical difficulties of including the study in the report itself. It was determined that a statement such as "For the entire report, refer to (insert URL for the study location)" would be inserted into the report to refer to the study, and the study would be available online for review.

A member expressed a desire to see Texas Parks and Wildlife work more with the community in a positive manner so people would view TPWD as an ally rather than an adversary. Chairman Eikenhorst referenced the participation of TPWD's nature tourism program with the SHWG and potential input as an example. A TPWD employee assured the group that Sweetwater's concerns have been heard and that this group has been assembled to discuss differences and find common ground. He clarified that the recommendations of the group are not the endpoint of the process.

Representative King's staff expressed a concern that Sweetwater's Rattlesnake Roundup is unique and that if a regulation were passed, it would be a burden on the event. It was suggested that instead of making a regulation, that TPWD work with the community to develop solutions to the problem and alternative means of take, like regulating the volume of gas, how much is used or the idea of a certain season. Representative King is also concerned that if a regulation is made, her legislative office and the town of Sweetwater are the ones who must implement it. The alternative-first, regulatory-second approach is preferred and it was suggested that research institutions be employed to find an alternative method to gassing.

One member expressed a desire to have a demonstration project to illustrate the efficacy of alternative means of collection prior to regulation. The response was that South Dakota has 40 years of trapping history and many snakes have been caught by other means. This data will be compiled by TPWD and provided to the SHWG. This information could be a template detailing the efficacy of alternative means of collection and there may be other templates. Another member of the working group explained that he has two groups that hunt his property and last year they caught 300 pounds of snakes without using gas. He feels that alternatives to gassing do not have to be studied or discovered. He feels that some snake hunters are already demonstrating that rattlesnakes can be successfully harvested in large numbers without the use of gas.

A member representing Sweetwater feels there is a direct correlation between the number of snakes and the success of the Sweetwater Roundup and commented that the working group doesn't know that because they haven't attended the Roundup. He compared the Sweetwater roundup to the Super Bowl because he claims it is bigger than all the other roundups put together. He reasoned that if they have the most snakes and the most attendance, there is a direct correlation.

A member questioned how many snakes are necessary at the Sweetwater Roundup indicating that most people are satisfied by just seeing "a big pile of snakes". He stated there has been no data indicating that the number of snakes brought in each year impacts the quality or viability of the Sweetwater roundup. The member went on to say that snakes are a publicly owned resource. He stated that we should strive to do the "difficult right" rather than the "easy wrong".

Two members representing Sweetwater clarified that there is no direct correlation between snake numbers and attendance each year since people make reservations to attend a year in advance, so the harvest in a particular year is not related to attendance that year. However, they went on to explain that it's the reputation that Sweetwater has from past harvest that matters. Their harvest data has given them the title of the world's largest and that helps drive attendance.

It was mentioned that whatever course of action is taken, there needs to be clear metrics to indicate progress.

One person said that the Working Group is split down the middle; half want to ban gassing and half do not and this has been a waste of time. He expressed disappointment with the draft report as it is currently written. He indicated it was information overload and contained misunderstandings and missing pieces and is a written version of John Davis' presentations. The member doesn't want his name attached to it because he feels it's not an accurate reflection of what has been discussed. Another member expressed agreement with that sentiment. In contrast, others thought it captured the essence of what the group has discussed. From a policy standpoint, the current, draft report provides the full range of the working group's opinions and the Commission will have a good idea of what was discussed.

Dr. Eikenhorst reminded the group that the Points of Consideration (POC) (discussed later) will be the instrument to finding a resolution vs. a solution and that creating the resolution isn't a one-step process. He explained that the POCs emerged as a result of the strong opinions on both sides of the gassing issue and that the points would be yet another way for the diversity of opinions to be represented. He went on to explain that it is customary for final reports to focus on the majority consensus with a dissenting opinion included. This report will not only provide majority and minority opinions in the document, but will also include two other avenues for members to include unedited perspectives (the POC comments and the addendum section).

It was reiterated that the working group does not make the final decision and it may be that the group will not get to a unified recommendation.

DISCUSSION ON POINTS OF CONSIDERATION

The discussion moved to reviewing and rewording the POCs. The Points of Consideration are viewed as pivotal points in this issue upon which there is agreement or disagreement. It was clarified that the POCs are for the members of the working group only and the forms will be sent to the absent group members. The group's results will become part of the final report. The POC list contains various approaches to be considered relating to gassing. Those approaches range from regulating amounts of gas or legal seasons, to a statewide prohibition.

One member commented that it makes sense to proceed from a demonstration project to a regulation, rather than a regulation to a demonstration project and that on private land you ought to be able to do whatever you think is right. The member did not see any practical way gassing can be regulated. In response, a TPWD Law Enforcement employee agreed it would be difficult to regulate and enforcement of any regulation related to gassing would operate the same as enforcement of other wildlife laws, i.e. tips/leads and investigation are what leads to discovering violators.

Dr. Eikenhorst explained that due to a lack of consensus on recommendations, the group has opted to develop POCs. Executive Director Carter Smith understands and is supportive of this decision. It was reiterated that each individual member might not fully agree or disagree with each POC; therefore a comment section will be added, allowing each member an opportunity to explain their position. In addition, each member is encouraged to submit their unedited, comments to be inserted into the addendum section of the final report.

The group vetted each POC for relevance, structure and accuracy. The list below reflects the final language of each POC as agreed upon by the group.

POC #1.

Snake themed events are a long standing tradition in some communities and provide social and economic benefits.

POC #2.

Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

POC #3.

Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

POC #4.

NEW: In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact. *(At the request of Sweetwater representatives, this POC was added after the discussion regarding the lack of correlation between attendance and snake harvest in a particular year.)*

POC #5.

11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

POC #6.

Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

POC #7.

The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

POC #8.

The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

POC #9.

The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

POC #10.

The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

POC #11.

Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

POC #12.

Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

POC #13.

If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

POC #14.

Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes. *(This POC was added at the request of members of the SHWG.)*

Summation of Points of Consideration:

During the discussion, the group believed that investigating incentives for alternative methods of take for Western Diamondback Rattlesnakes is outside the scope of this working group. But it was agreed that a case study utilizing traps would be provided to the group *(in process)*.

RECAP, WRAP UP AND NEXT STEPS

Timeline for next steps was established.

- 09/03/2015: Email Points of Consideration to all SHWG members for response
- 09/11/2015: Email compiled notes from meeting #4 to the SHWG for review / edits
- 09/17/2015: Submit completed the Points of Consideration document to TPWD from SHWG
- 09/17/2015: Submit edits to meeting #4 notes back to TPWD from SHWG
- 09/23/2015: Email "Final" meeting #4 notes to SHWG
- 09/25/2015: Approve "Final" meeting #4 and distribute to SHWG
- 09/25/2015: Submit edits to draft #1 of report to TPWD
- 10/09/2015: Consider edits into draft #2 and email to SHWG for 2nd round edits
- 10/19/2015: Submit 2nd round edits (draft #2) as well as individual addenda (*statements from each person about the process, decisions, personal perspective, etc.*) to TPWD
- 11/13/2015: Add Addenda, integrate appropriate edits and prepare final draft for Carter Smith (Executive Director of TPWD) review

Final statements were made by Dr. Eikenhorst and Representative King thanking everyone for their time and commitment to the process. Meeting adjourned.

ACTION ITEMS

- Send digital copy of draft from the meeting to the SHWG members.
- Put together a package of meeting notes for the group of first three meetings.
- Work with Leah Andrews to make available the entire *Economic Study Report*.
- John Davis is to send out information regarding the efficacy of snake trapping.
- Update the Points of Consideration Form as discussed and send to all members of the group.
- Email group members the most recent version of the SHWG Final Report DRAFT.
- Update the member list. Bryan Law isn't a member, but staff liaison.
- Reword the bottom of page 7 regarding public comment. The paragraph talks about 2013 forward but then references the timeline starting in 2009.
- Include a statement in the final report similar to "This group's perspective isn't unanimous, but individual opinions can be found in the addendum."

APPENDIX 6: POINTS OF CONSIDERATION – INDIVIDUAL RESPONSES (UNEDITED AND IN NO PARTICULAR ORDER)

James Wright

Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

   AGREE ☐ DISAGREE ☒ UNDECIDED ☐

   Comments: People don't attend roundups to see a specific number or specific weight of snakes. They walk in and see a large pit full of rattlesnakes and are overwhelmed and satisfied. Sweetwater has always been the largest snake roundup due to the fact they are the best motivated and organized group. Gassing dens does not give them any advantage. Therefore Sweetwater Rattlesnake Roundup will remain the largest rattlesnake roundup with or without gassing.

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: The amount of gas used would be impossible to regulate.

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: Snakes and not-target species all use the dens in the same temperature conditions.

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: Where geographically do non-target species not exist?

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments:

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

SHWG MEMBER NAME: James Wright

DATE: 9-5-15

Donna Boatright

Snake Harvest Working Group
Points of Consideration

15. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

16. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

17. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

Comments:

18. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

19. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

I agree this was reported but am not convinced that this is true.

20. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

21. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

There is no research to support or dispute this statement.

22. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

There is no research to support or dispute this statement.

23. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

As above

24. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

This is impractical as it is unenforceable.

25. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

26. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

27. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

28. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

I think demonstration projects and efforts might result in alternate take methods that would be acceptable to all. But this will take money and time.

SHWG MEMBER NAME: Donna Boatright

DATE: September 21, 2015

29. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

30. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

31. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

32. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Despite statements made by representatives of the Sweetwater event, information provided, or available from other sources, indicate that in recent years the event has continued to be successful and grow even though the reported quantity of snakes has shown a decreasing trend.

33. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

34. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

It is a certainty that other species inhabit these dens and it is a scientifically proven fact that gasoline and its vapors are potentially lethal to a vast array of species.

35. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

The science indicates that minute quantities of gasoline and its vapors can be lethal to many invertebrate species. In addition, regulation of quantities used would be virtually impossible to enforce.

36. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Whether non-target species are killed in the spring, summer or fall is irrelevant.

37. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Making value judgements determining that threatening a species is appropriate in one geographic area but not another is not a solution. An endemic species living only within the approved area would still potentially be eliminated.

38. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

A complete ban is the only ecologically sound solution.

39. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

The first, and most proactive, effort should be a complete ban on gassing.

40. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

The gassing issue is not one of WDR populations and facilitating their take using other methods through the permit process would provide greater opportunities for snake hunters to support local round-ups.

41. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Gasoline is a dangerous substance that should not be introduced into the environment. At a minimum, this is where the volume of gasoline used should be regulated.

42. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

SHWG MEMBER NAME:	Robert Denkhaus
DATE:	9-6-15

Don Roeber

Snake Harvest Working Group
Points of Consideration

43. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

In contemporary times, the main reason for communities to have rattlesnake roundups is primarily for bringing in funds for the local economy of each hosting city as well as to provide funds to charities.

44. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

45. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

46. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

I believe ticket sales have no bearing on the number of snakes collected or displayed. As long as enough animals can be collected to provide the visual incentive for the public to continue to attend these events, roundup management should not be concerned with the specific number or poundage of snakes collected for their respective event.

47. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

The antivenin industry has sources other than the roundups for obtaining needed venom. In fact, a new emerging Mexican vendor in this space is not even using western diamondback venom to produce their antivenin. Other major vendors in this space are keeping their own captive populations of rattlesnakes for producing antivenin. There is simply no compelling argument that rattlesnake roundups provide a significant amount of venom to this industry.

48. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Compelling data exists that demonstrates petroleum, whether in liquid or gaseous form, has a negative impact on all animals in a karst system.

49. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

I believe that the level of petroleum vapors that would be required to drive rattlesnakes to the surface would be at sufficient strength to cause significant damage or even mortality to other organisms in the den environment. Certainly, no study has been conducted to prove otherwise.

50. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Using the same rational provided in 7 above, all it would take is one instance of gassing at a particular den site to have a negative impact on the rest of the organisms in that karst feature.

51. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Even if restricted to a geographic area the same impacts could occur as described in points 7 and 8 above.

52. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

53. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Compelling data and additional discussion in the group has demonstrated to me that petroleum, whether in liquid or gaseous form, has a negative impact on all animals in a karst system (whether invertebrates or vertebrates). This fact is not lost on concerned persons and groups, both inside and outside of Texas. Continued use of this gassing practice could expose Texas to re-classification of some karst animals. This act would, in turn, place additional burden on the Department to develop, administer, and enforce the appropriate species management plans. Additional constraints could also be placed on landowners with karst features on their property as to their land-use practices. Even (provided that the process would be enforceable) if the Department were to allow gassing at only a few select den sites, there is significant risk that even at those sites, invertebrates that have evolved specifically in those karst features could be endangered.

54. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

55. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

56. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Rattlesnakes can be harvested in sufficient numbers by timing collection activities when the snakes are above ground around the openings of the dens. This requires a little more extra consideration and work from the collectors, but can definitely be done. There are also opportunities to place funnel trap mechanisms around the openings of den sites to collect the snakes. Funnel traps of various designs have been used by scientists as well as lay persons to collect all manners of species in the past, including snakes. Funnel traps are a proven technique for collecting wildlife. One consideration with this argument is that roundups may need to be moved to dates that are better timed to take advantage of non-gassing methods of take, but with proactive marketing and planning, these events can be moved to other dates.

SHWG MEMBER NAME: Don Roeber

DATE: 9/15/2015

Ken Becker

Snake Harvest Working Group
Points of Consideration

57. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

AGREE ☐x DISAGREE ☐ UNDECIDED ☐

Comments: Each event should stand on its own merit, mission, and marketing. Some of the so-called snake events are more tied to Music Festivals.

58. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments: As most events, those that are successful will evolve over the years into what keeps the people coming. Many event organizers will change the event and find that the public no longer has interest in and quits attending. The Sweetwater Round Up's core is still about rattlesnake safety and controlling the rattlesnake population in our region. Many additional events have been added over the years to make its draw appeal to a wider variety of participants w/out changing the core purpose & message.

59. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☐ DISAGREE ☐x UNDECIDED ☐

Comments: That statement is taking a lot of assumptions. I'm sure that each of us could back up reasons as to what it is we think happened. Since this question is based on an assumption, here is my assumption: Sweetwater's Round Up is a body of work over many years. I believe that the poundage amounts over time have been one of the keys to our success. One of the other keys has been that we have stuck to our core beliefs. Some RRup's went away from the core and continued to change to met what they thought the public wanted and became irrelevant.

60. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: I do believe over time, the larger amount of snakes and the fact that Sweetwater can "market" the largest RRup based on overall capture, makes a difference in the attendance. Without the continued upgrading and "marketing" of the event, the attendance would at some point decline. Staying w/ our core purpose and the continuation of our marketing efforts, the event builds on its own successes. There are so many reasons that the snake count take can raise and lower. To assume that the number is lower because of fewer snakes or the effects of gassing to a den is long term, is just that, an assumption. We do have dens that have been gassed and hunted year after year and continue to produce snakes. The economic impact is also affected based on things like additional motels in Sweetwater built for the "Tourism & Development" body of work for the whole year. Events are added together to be used as justification for future expansions in hotel/motels, restaurants, retail, and others.

61. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: Until proven otherwise, I question the validity of the information gathered. Not knowing how the questions were asked leaves a question to the results. Assuming that a phone call to a stranger is "trusted" information and that a committee members statement and personal knowledge is "questioned" information? I could make calls and lead my caller to the answers I want.

62. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: At this point, unless there is information I have missed, we are basing this on assumptions. I assume that gas fumes entered into a confined space "could" harm non-targeted species. I would also assume that these dens are not sealed and would hold all the fumes released. I have not seen or heard of studied evidence over time that supports the assumptions.

63. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: This statement makes sense and I would assume that releasing less fumes would do less damage. My struggle is that w/out scientific data, how do we know that less, more, any, a lot is good or bad and to whom?

64. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: Again, as in my answer to #7, w/out scientific data, how do we know?

65. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☐ UNDECIDED x☐

Comments: The comment makes some sense but as in #7 and #8, what do we have to base this on? Is a season needed, how long, how short, if at all, what geographic region, etc.?

66. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE x☐ UNDECIDED ☐

Comments: Some of the other options have been based on assumption and some sort of compromise. This statement is based on limited scientific data at best w/ no compromise.

67. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments: We have become “too” politically correct in the US and knuckle under the pressure of Big Government. Texas has done well for itself and its constituents by not folding under to pressure. I understand the need to work w/ and compromise on certain point and at certain levels. We must also be careful of becoming a state that gives up before a punch is even thrown. I assume that the intent of this committee is to weight our options and be ready for friendly battle. If not, maybe we can follow France and stay out of the battle so we won’t lose or get hurt.

68. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☐x DISAGREE ☐ UNDECIDED ☐

Comments: If we truly want to collect data, the current process needs to be refined.

69. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments: Even though I agree w/ the statement, it seems strange that we would compromise here as I believe that most of the purpose of hunting around our RRup is based on human/animal safety. I am also not naïve to assume that all hunters view my reason for hunting. Many do it for the sport, the thrill, and the $$.

70. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments: The overall comment makes sense.

SHWG MEMBER NAME: Ken Becker

DATE: 9-18-15

Leah Andrews

Snake Harvest Working Group

Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Yes, they provide a huge economic benefit to the businesses, civic clubs and non-profit organizations in Nolan County Alone. An **Independent study** obtained by the Sweetwater & Nolan County Chamber of Commerce found that the economic impact to our area is $8.4 million dollars for the one weekend in March. It also provides a benefit of snake population control, which many who do not live in this area do not understand, nor appreciate.

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE ☐ DISAGREE ☒ UNDECIDED ☐

This is an **opinion** of the Parks & Wildlife Employee presentor and of the people he called and made inquiry of. I do not like this statement because it implies that diversification of *our* event would have no impact on it. We established, in our meetings, that the Sweetwater event is unlike any other snake event as it is the LARGEST and that people travel from **around the globe** to view LARGE numbers of snakes. They do not, and would not travel from around the globe to visit a flea market or car show. We have diversified the event to allow more groups to participate and reap the economic benefit of the event, but ***by no means should anyone be fooled into believing that changing the event and taking the focus off of the numbers of diamondback rattlesnakes would not harm the event beyond repair***. This would absolutely cause the loss of thousands of visitors and millions of dollars to our area economy.

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

Again, I stress that the Sweetwater event is an "outlier" from all the other "snake" events. I do believe that the presentor reported this opinion, to support his desired outcome. The 21 events he reportedly contacted are nothing like the Sweetwater event. ***Be clear*** that he may have constructed his studies and his questions to obtain the results he wishes to secure.

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

This is a fact that I know to be true. I walk the floors of the coliseum every year during the Sweetwater Event. I talk to hundreds of people each day. I hear from folks who came with their fathers or grandfathers when they were children who are now bringing their own children to see the "snake pits". They ask for more pits than we curently have every year. ***The large number of snakes is what folks pay to see and that IS what directly impacts our community*** and the surrounding communities of Abilene, Snyder, Colorado City and even Big Springs in the amount of $8.4 million per year.

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

These results are not PROVEN. I believe that this is what was reported to us in these meetings by John Davis who could easily have constructed his questions and his research to obtain **his** desired results.

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

In **theory,** possibly. Yet, I have no conclusive studies that have been done in our area that provide evidence that *anything* is being harmed. I have observed many snake hunts in this area and in all honesty do not believe that what is hunted out here in West Texas is anything like what some would consider a "den". Theory does not always equal reality.

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

I believe that the hunters are cautious people who hunt the same dens year after year. I believe they are careful to preserve the environment so that they may return to hunt the snakes every year from the same locations. Yet there is no proof to support or deny this assertion.

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

I believe this could be an option that may satisfy folks who are acting on fears of federal regulations being instituted in the State of Texas, yet again there is not any specific evidence to support or disprove this theory.

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☐ UNDECIDED ☒

I believe this may be an option that may satisfy folks who are acting on fears of federal regulations being instituted in the State of Texas.

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

I sincerely believe that this would be unnecessary legislation that would cause undue and irreversible damage to a long standing way of life in our area. This would be over-reaching government at its worst, and would prove to cause both harmful to the people of the area due to increased snake populations and harmful to the economic stability of the area businesses and organizations that benefit from the event. It would be a sincere and obvious scar on this great state to let a petition that was brought about by primarily folks who are not from Texas, cause such long-reaching effects on our people and our economies. This is ***especially*** true in light of the recent legislation that was passed that would prevent such petitions from having such effect. :

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

However, I believe that Texas is strong enough to stand on its own and I do not see it as necessary to cause such damage to a long-standing and highly valuable event based upon the "fears" of future policy. Tomorrow has enough trouble of its own without borrowing it. I believe that wide sweeping "rules" that have the effect of law should not be entered into lightly, especially considering the impact and the detriment to our area that this proposed ruling would have.

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Streamlining the process would help the data collection accuracy.

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

This statement appears strange as the human safety would obviously be the highest concern.

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☒

I like this idea overall. However, I would add that research and support must be at the local level and not from an office in Austin. "Boots on the Ground" type research is needed. Actual, useful, proven and cost effective methods are what would be needed, not simply ideas that can be illustrated on paper but have no practical use in our west Texas climate and terrain.

SHWG MEMBER NAME: Leah C. Andrews

DATE: 9/17/15

Terry Hibbitts

Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments: The event could remain snake-themed but not include the killing of large numbers of rattlesnakes like similar events in Pennsylvania.

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

   AGREE ☐ DISAGREE ☐ UNDECIDED ☒

   Comments: There has been no actual Scientific research and data completed to show any correlation between snake numbers/weights at these events.

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

   AGREE ☐ DISAGREE ☒ UNDECIDED ☐

   Comments: We don't know this until the numbers are reduced.

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments: That's what they say and I tend to believe them.

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: This is a fact. The research has demonstrated these facts. It is really not something to agree or disagree on.

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: Any gas is too much.

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: Any gas any time is too much.

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: No gassing at all.

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: That's where we need to go.

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: I agree that people can kill them around their homes but "no regulation" could mean things that are already deemed illegal like shooting in town or gassing.

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: Why would TPWD want to provide snake collectors information about how to find and collect species? It is the onus of the collector to find this information on their own.

SHWG MEMBER NAME: Terry Hibbitts

DATE: 9-12-2015

Don Steinbach

Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE x☐ DISAGREE ☐ UNDECIDED ☐

   Comments:

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE x☐ DISAGREE ☐ UNDECIDED ☐

   Comments:

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

   AGREE x☐ DISAGREE ☐ UNDECIDED ☐

   Comments:

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

   AGREE ☐ DISAGREE x☐ UNDECIDED ☐

   Comments:

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

   AGREE x☐ DISAGREE ☐ UNDECIDED ☐

   Comments:

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

   AGREE x DISAGREE ☐ UNDECIDED ☐

   Comments:

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE x UNDECIDED ☐

Comments:

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☐x UNDECIDED ☐

Comments:

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments:

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments:

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☐x DISAGREE ☐ UNDECIDED ☐

Comments:

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE x☐ DISAGREE ☐ UNDECIDED ☐

Comments:

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☐x DISAGREE ☐ UNDECIDED ☐

Comments:

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

SHWG MEMBER NAME: Don Steinbach

DATE: 21 Sept 2015

Billy Wright

Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE x DISAGREE ☐ UNDECIDED ☐

   Comments:

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE x DISAGREE ☐ UNDECIDED ☐

   Comments:

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

   AGREE ☐ DISAGREE x UNDECIDED ☐

   Comments:

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

   AGREE x DISAGREE ☐ UNDECIDED ☐

   Comments:

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

   AGREE ☐ DISAGREE x UNDECIDED ☐

   Comments: these reports were unreliable and self-serving

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

   AGREE ☐ DISAGREE x UNDECIDED ☐

Comments: the minute amount of vapors introduced has very little impact

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE x UNDECIDED ☐

Comments:

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE x DISAGREE ☐ UNDECIDED ☐

Comments:

SHWG MEMBER NAME: Wm. B. Wright, Jr.

DATE: 9/4/2015

Bill Eikenhorst

Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

   AGREE ☐ DISAGREE ☐ UNDECIDED ☒

   Comments:

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

   Comments:

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

   AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments:

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments:

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments:

SHWG MEMBER NAME: Bill Eikenhorst

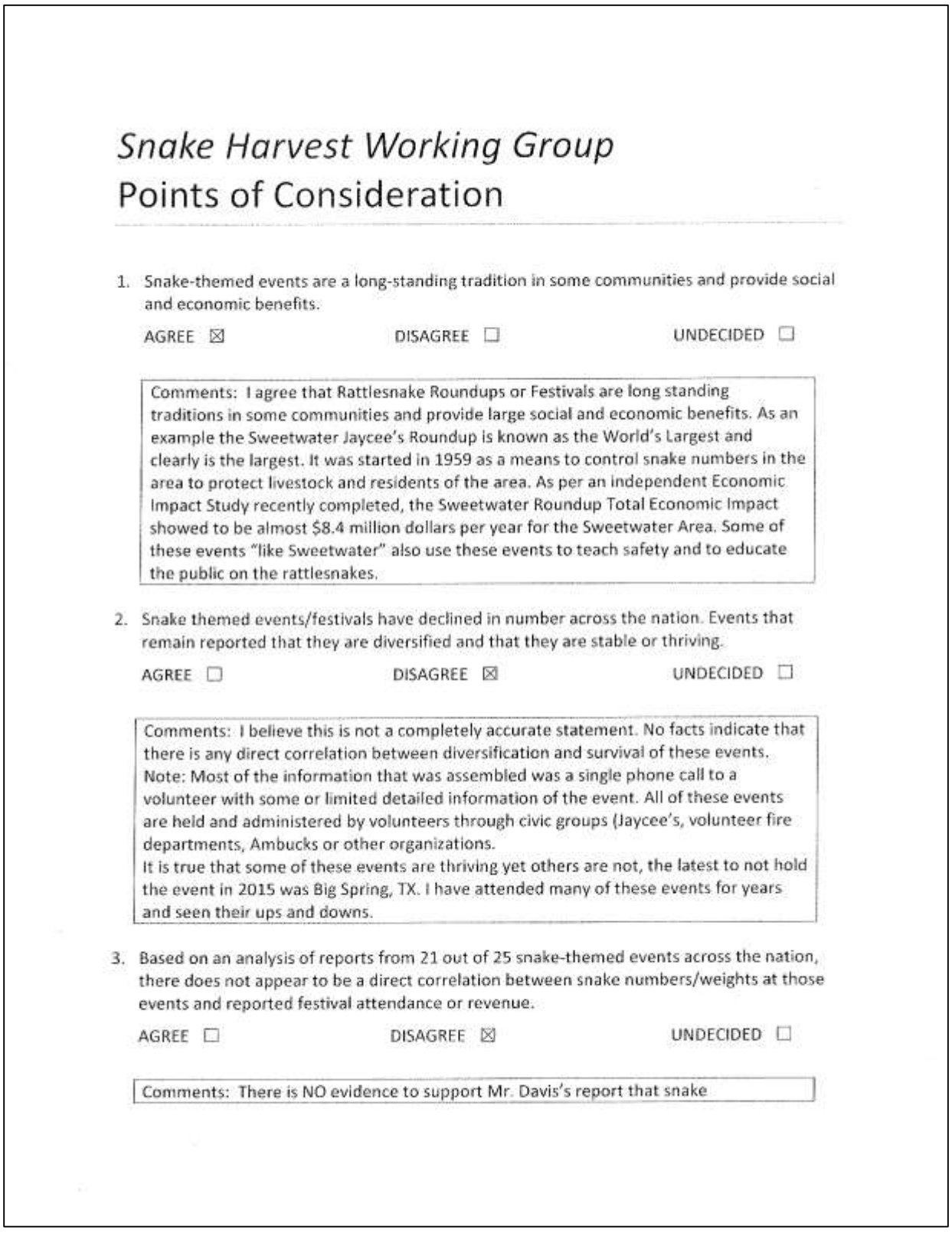
DATE: 9/21/15

Kaleb McLaurin

(Mr. McLaurin did not submit this document.)

Dennis Cumbie

(Due to the format in which Mr. Cumbie submitted his documentation, it had to be scanned and included as an image.)



Snake Harvest Working Group
Points of Consideration

1. Snake-themed events are a long-standing tradition in some communities and provide social and economic benefits.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: I agree that Rattlesnake Roundups or Festivals are long standing traditions in some communities and provide large social and economic benefits. As an example the Sweetwater Jaycee's Roundup is known as the World's Largest and clearly is the largest. It was started in 1959 as a means to control snake numbers in the area to protect livestock and residents of the area. As per an independent Economic Impact Study recently completed, the Sweetwater Roundup Total Economic Impact showed to be almost $8.4 million dollars per year for the Sweetwater Area. Some of these events "like Sweetwater" also use these events to teach safety and to educate the public on the rattlesnakes.

2. Snake themed events/festivals have declined in number across the nation. Events that remain reported that they are diversified and that they are stable or thriving.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: I believe this is not a completely accurate statement. No facts indicate that there is any direct correlation between diversification and survival of these events. Note: Most of the information that was assembled was a single phone call to a volunteer with some or limited detailed information of the event. All of these events are held and administered by volunteers through civic groups (Jaycee's, volunteer fire departments, Ambucks or other organizations.
It is true that some of these events are thriving yet others are not, the latest to not hold the event in 2015 was Big Spring, TX. I have attended many of these events for years and seen their ups and downs.

3. Based on an analysis of reports from 21 out of 25 snake-themed events across the nation, there does not appear to be a direct correlation between snake numbers/weights at those events and reported festival attendance or revenue.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: There is NO evidence to support Mr. Davis's report that snake

numbers/pounds has no direct correlation with the success of these rattlesnake roundups. First thing to consider is Mr. Davis summary report came from a conversation he had with someone in the community or that was involved with the event in some capacity. These Roundups are organized and ran by volunteers, mostly as part of civic groups. Therefore most of these events do not keep records of much detail or at all, therefore most of the information provided is just a guest a munt (mostly inflated for positive PR purposes).
It also needs to be pointed out that in a size prospective the Sweetwater Roundup is as large as all of the other Rattlesnake Roundups put together.
As per Mr. Davis's report some of the events buy little to no snakes, and therefore are Rattlesnake Shows not Roundups. Those reported to use rent-a-snakes furnished by Randal Briggs (Randal's Wildlife Creations) which are snakes he purchased from Sweetwater's Roundup (as it is the first event of the year). Without Sweetwater collecting enough snakes each year (which they us approximately 1200 pounds a year for meat) to sale to Mr. Briggs he would not be able to furnish snakes to the rent-a-snake shows.
I have milked snakes (extracted venom) for Ken Darnell "Bioactive Lab"and now myself from several of these roundups and personally attended most of them in Texas and Oklahoma. I know from my direct contact visiting with snake dealers, venom dealers, and vendors that none of the other rattlesnake roundups have an average attendance of 10,000 people per year.
I think it is very evident that the number of snakes/pounds does have a direct correlation between success of Rattle Snake Roundups (Sweetwater consistently has the most snake and the most people to attend).

4. In contrast, Sweetwater reports that there is an expectation of higher numbers of snakes based on historical take, which drives attendance and economic impact.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: The Sweetwater Jaycees Roundup is the largest in attendance and the largest in snake collection. People from all over the world come to see the snakes the other diversified events held in conjunction are simply ways to maximize the local impact by increasing sources of income. (Example: If you are going to the Movie Theater to watch a movie that is why you are going, they are selling you the popcorn and soda's simply to increase their profits).
The Sweetwater Roundup has 5 different areas with snakes for guest to see and learn about the snakes. "The Show Pit, The Milking Pit, The Research Pit, the Skinning Pit, and the holding Pit. Without a large number of snakes it would not be possible to operate these pits. Sweetwater pays a premium price for snakes to insure a large collection, knowing this is what the people come to see.
In conclusion, it would only seem reasonable that if a roundup that consistently has the most snakes and the most attendance to see the snakes, that in fact there is a direct correlation between snake numbers/pounds and attendance. Which means increased

success and revenue.

5. 11 of 12 of the individuals/companies in the venom industry reported that a prohibition on the use of gasoline to collect rattlesnakes in Texas would have limited impact on the supply of western diamondback rattlesnake venom for the pet vaccine, antivenin, or medical research markets.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: I strongly disagree with this statement for several reasonable and factual reasons. First: The information that Mr. Davis supplied to the work group was collected from him "a TPWD government official" calling these individuals and businesses basically asking them "DO YOU BUY VENOM FROM GASSED SNAKES."
In his report he goes to great lengths focusing on BTG the company that produces the anti-venin CroFab for treating humans that have been bitten by poisonous snakes. Although he visited with several people with BTG it is a proven fact that BTG has long purchased Venom from Ken Darnell "Bioactive Lab" that was collected at roundups (including Sweetwater) where a lot of the snakes were collected using the gassing method. This proof was issued to TPWD by Mr. Darnell through cancelled checks and contracts of large amounts where BTG purchased venom for producing CroFab. The venom he sold them is venom he purchased from Roundups. Mr. Darnell has long purchased the venom from Sweetwater, Big Spring, Mangum, Waurika, and other roundups.
I Dennis Cumbie have been a member of the Sweetwater Jaycees and have proof that every drop of venom collected the Sweetwater Roundup for the past 20 plus years has been sold and was used in the medical research and anti-venin industry. Sweetwater historically produces over a liter of venom each year at its Roundup. For the past several years I have worked for Ken Darnell "Bioactive Lab" in the capacity of going to other roundups to Milk snakes collected at their Roundups. I have milked snakes at Big Spring, Brownwood, Mangum, OK and Waurika, OK. That venom was from many snakes that were collected using the gassing method. Although Oklahoma has banned gassing many of the snakes they collect come from Texas. Before I started going to other roundups to collect venom Mr. Darnell collected it himself at those roundups.
Mr. Darnell has provided evidence that he also sale's venom to other research and drug companies for years.
It is more than reasonable to believe that if large amounts of venom is being produced at Roundups where snakes have been collected using the gassing method, and sold into the venom industry, that without the snakes being caught then sold to Roundups that a venom shortage would be created.
I believe the evidence shows that without venom supplied by roundups like Sweetwater that some of the drugs developed and used today would not exist and many of us and love ones would have suffered or died.
I believe that a large part of Mr. Davis's research write-up on venom is his opinion and not fact as he states. I also believe that he was misinformed by those he interviewed by

phone for fear of bad PR for them and company "DO YOU BUY VENOM FROM GASSED SNAKES?" He has no signed documents from research market place other than a letter from BTG saying they will not knowingly buy venom from gassed snakes.
Fact venom produced this year at roundups has entered and been sold in the market place, as I sold it myself.
(I will attempt to attach documents from Ken Darnell "Bioactive LAB" as to the details of venom history and uses)

6. Introducing gasoline and/or its associated vapors into naturally occurring western diamondback rattlesnake dens poses potential threats to populations of non-target species that might occupy those dens alongside rattlesnakes.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: There is no direct scientific evidence or studies showing that using gasoline to collect Western Diamond Rattlesnakes in West Texas. All the data used by Mr. Davis in his report was in lab settings or tortoise holes in other states.
The focus of TPWD has been that gassing of WDR could be a possible threat to the Karst invertebrates which are shown to be in Texas. Research by the TPWD and USFWS both show that these Karst main habitat is moist, wet, humid environments mostly in limestone caves and crevices. Western Diamond Rattlesnakes are not collected using gas in these areas, as WDR cannot survive in moist wet environments and therefore do not inhabit in the same places as Karst. (There is no scientific research on what does live in Dens with WDR).
The Sweetwater Jaycees have for many years offered TPWD to assist in research studies to see these kind of things but NO research has been conducted.

7. The potential threats to populations of non-target species may be sufficiently addressed by placing restrictions on volume of gasoline used per den when collecting western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: As part of the Work Group I have recommended a possible solution to this subject.TO LIMIT THE VOLUME OF GAS BEING USED WHEN COLLECTING WESTERN DIAMONDBACK RATTLESNAKES. We are surrounded every day with toxic things, fortunately a lot of toxic things are limited to reduce the risk of potential impacts. Why not do the same thing here.
I have hunted snakes for over 30 years myself and know many other hunters across the country that use gasoline to collect WDR. I have hunted dens year after year and used gas as a collection method in the same dens and continue to collect snakes from those same dens. If damage to dens occurred in this process it would be reasonable to believe that snakes would no longer exist in those dens. Most hunters use gas only in small amounts so snakes and dens are not damaged. This allows repeated hunting without having to find

new areas to hunt. Most of us hunters are considered to be good stewards of the land. I believe this could be a reasonable viable solution to this matter.

8. The potential threats to populations of non-target species may be sufficiently addressed by establishing a defined season for gassing western diamondback rattlesnake dens.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: This could be advantageous if the seasons are set correctly. It would need to be open during the typical normal collection time of year.

9. The potential threats to populations of non-target species may be sufficiently addressed by limiting gassing of western diamondback rattlesnake dens to specific geographic areas.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: I agree this would assist in potential threats to non-targeted species as long as it allows hunting using the gassing method in known areas of WDR inhabitation. Example: Most of East Texas does not have a large number of WDR yet may have a large number of non-targeted species.

10. The potential threats to populations of non-target species may be best addressed by a statewide prohibition on gassing western diamondback rattlesnake dens.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: I totally disagree with a statewide prohibition on gassing of WDR dens. No scientific research has been conducted showing a potential threat to populations of non-targeted species when using gas to collect WDR.

A. Texas has approximately 171.8 million acres of land.
B. A liberal estimate average of 12,000 pounds of WDR are harvested in Texas per/yr.
C. If an average den produced only 4 pounds of snakes that would mean 3000 dens were hunted each year.
D. If the average size of a snake den 500 sq. feet (that would be a big one)
E. Assuming all dens gas was used (we know not all are gassed)

Conclusion:

3000 dens X 500 sq. ft. divided 43566(sq. ft. in an acre) = 34 acres of gassed land divided by 171.8 million acres = .00002% of land in Texas that could be exposed to gassing od WDR.

According to surveys returned by hunters less than 8 oz. of gas is used per den. Using the above figures, that would mean the total gas used would be 187 gallons, effecting 34 acres of the 171.8 million acres in Texas.

Using gas to collect WDR has been going on for over 50 years without one shred of scientific data showing that any living thing has been negatively affected in Texas.

The minimal amount of land and gas offers virtually no potential threat to any species in Texas. Yet potential negative impact to Charitable Civic organizations, to potential venom shortage, and the potential to destroy some communities' cultural practices, as well as the negative economic impact to those communities.

11. Proactive efforts by the state and/or private landowners to reduce the potential threats to populations of non-target species are preferred to having the potential threats addressed through official policy implemented by the U.S. Fish and Wildlife Service.

AGREE ☐ DISAGREE ☒ UNDECIDED ☐

Comments: I disagree and agree with this statement. I believe being proactive in efforts by the state to reduce potential threats, ONLY if a real threat exist which in this case they do not!
This is simply a method the TPWD staff is using as a scare tactic and excuse to abolish using gas to collect WDR, which would achieve those individuals' goals of simply abolishing Roundups all together. As I believe Mr. Gluesenkamp TPWD employee once told a Sweetwater Jaycee member he wanted to abolish roundups because he felt we were exploiting the snakes.

12. Flexibility and/or streamlining should be considered in the nongame permit process as it pertains to western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: I believe that doing away with the non-game permit and possibly even licensing requirement would help with some collection of WDR.
Although I do not believe this would alleviate the impact if gassing is banned.

13. If any regulatory action relative to gassing western diamondback rattlesnakes is considered, there should be no restrictions on methods of taking rattlesnakes near or around man-made structures or similar areas of human activity to ensure human safety.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: I agree this as long it is not restricted to licensed professionals. Most good experienced snake hunters are not licensed pesticide applicators.

14. Texas Parks and Wildlife Department and relevant partners will assist with potential future research and provide support for alternative methods of collection of western diamondback rattlesnakes.

AGREE ☒ DISAGREE ☐ UNDECIDED ☐

Comments: I agree although these methods need to be practical and successful at collecting WDR in the areas where they are normally found and hunted. These methods need to be proven to work BEFORE any restrictions such as not gassing are implemented. Also support does not mean TPWD tested and approved. It means hunter tested and approved. The Sweetwater Jaycees will be glad to assist in this research.

SHWG MEMBER NAME: Dennis V. Cumbie

DATE: 09/14/2015

Documents referenced in Mr. Cumbie's Points of Consideration document:

----- Original Message -----
From: ken darnell
To: John Davis
Sent: Wednesday, February 05, 2014 7:43 PM
Subject: Re: Question about C. atrox venom and drug development

Hi John

You need to understand the manner in which these drugs (and most natural products-derived drugs) are normally developed. Captopril (tradename Capoten) was developed by Bristol-Myers, now Bristol Myers-Squibb, and who knows what name they may be using now since most big drug companies have set up shop overseas through mergers with companies headquartered overseas or in their new names (to avoid paying US taxes, of course). In that study, a new class of compound was found to exist in the venoms of virtually all pit vipers which were included in the study This class of compounds came to be known as ACE inhibitors for angeotensin- converting-enzyme inhibitors and this all came about from these studies of Crotalus, Sistrurus, Agkistrodon and Bothrops genera venoms. Included in the study were venoms from virtually all US rattlesnakes and virtually all Bothrops and related genera. Western Diamondback venom figured prominently in the study as did Eastern Diamondback Rattlesnake venom due to availability as did Bothrops jarraraca venom.

ALL of these snakes had an ACE inhibitor (variations thereof due to the variability of a given fraction taken to have the same or similar activity from venoms from different species of snake). Any one of these venoms could have been used to model a synthetic drug of much smaller size to use for the drug Capoten, generic name captopril, which is a "blood pressure" medication. For any number of reasons, the B. jarraca venom was used as the model but venoms from ALL of these other snakes could have been used and actually were legally claimed in the first patent that issued from the U.S. Patent Office and which details the study better than any other document I'm aware of. A second patent described and claimed the synthetic versions of the drug and ALL of these synthetic versions could have been sold by BM-Squibb. All of these synthetic versions were useful and had BM-Squibb not protected them in their second patent, then their competitors could have moved in and sold versions of these ACE inhibitors which had not been protected by patent. A third patent also exists. The patent numbers are U.S. Patent 3,832,337: U.S. Patent 3,973,006 and U.S. Patent 4,046,889. These patents can be viewed on and printed off from pat2pdf.org or from the United States Patent and Trademark Office website but the Patent Office website is difficult to use unless you are familar with it.

Various reasons exist for using one venom as a model in situations like this. One is ability to easily model from one venom fraction as opposed to another. Another reason is the condition of the venom sample. Other reasons exist.

It should be noted here that the synthetic ACE inhibitor modeled from B. jarraca venom did not resemble the raw ACE inhibitor from B jarraca venom any more than it resembled the raw ACE inhibitors from all of the other pit viper venoms used in the study. The size of the synthetic molecule was reduced by thousands of times, for example. All of this can be seen in the patents issued to BM-Squibb. Note that BM-Squibb claimed protection for ALL of the naturally-occuring ACE inhibitors as effective drugs taken from ALL of the Crotalus, Sistrurus, Agkistrodon and Bothrops snakes used in their study. And initially, it was intended to make the drug from raw snake venom rather than from a synthesized molecule. I'm happy the drug was synthesized since I would have been working 24 hours a day for the last 35 years to keep up with demand for this 2 billion dollar a year drug. I would much rather supply the small amounts of venoms needed for these kinds of studies.

When the drug Capoten was introduced to the public years ago, much was made of the use of B. jarraca venom without much mention of the other venoms. Much like BTG not mentioning me when I can clearly prove that most of the venoms used to make Cro-Fab came from my production. Or does anyone believe BTG statements these days? Sorry for that

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unnecessary swipe at my good friends at BTG who are now telling me that they didn't libel me. They're saying with a straight face they didn't say those things that are clearly in the emails your people so graciously sent me. Oh, sorry, back to the subject at hand.

The drug Integrilin was developed similarly by screening scores of venoms, this work being done at Cor Therapeutics, which was subsequently bought out by Millennium Pharmaceuticals. Integrilin dissolves blood clots that are blocking blood flow to the heart and brain and therefore is used all over the planet to stop heart attack and stroke in progress and is THE most effective drug ever devised for this very important purpose. Cor and Millennium have more than 50 U.S. Patents covering this technology Perhaps the most important patent is U.S. Patent 5,968.902 issued to Bob Scarborough. Bob screened many pit viper venoms and found what is now referred to as "snake venom disintegrins" in essentially all of them.

It is true that the Southern Dusky Pygmy Rattlesnake has a disintegrin that was used to model a synthetic disintegrin that is sold as Integrilin. However, as with captopril, ALL of the snake venom disintegrins studied by Cor, including the disintegrin from the venom of Crotalus atrox, have a disintegrin that could have been used as a drug or used to model a synthetic drug with the same capability and which was also protected by patent.

All studies such as both of these use many venoms in screening and the presence of an ACE inhibitor activity or a disintegrin activity in more than one of the venoms is considered very good news to the chemists doing the work. No such study would not include the venom of Crotalus atrox.

Any of this make sense? Please realize that you're talking to a person with an advanced degree in chemistry who just happens to have practiced patent law for 50 years and who has produced snake venoms for 36 years. That must be the reason I may see the bigger picture than most might. Or why I go into so much detail. Or just talk so much.

As much as I like Texas, I do not like it when the weather is like it is now. I've never been as cold as I was one year in Sweetwater after their show. And why can't TPWD let me get on the side of doing away with gassing as I would like to do. In fact, ask Matt Wagner about my bringing up to him in a meeting about 7 years ago that gassing should be banned along with loosening up reporting requirements. Matt became angry with me for pushing this so hard. Andy knows what I'm talking about but somehow believes that TPWD can't possibly "give back" a regulation once they have it in place. Of course, that's ridiculous talk.

Please call me at 334-522-4350 if you want to talk about any of this or about any other question or subject of interest.

Ken Darnell
bioactive laboratories

----- Original Message -----
From: John Davis
To: kdarnell@graceba.net
Sent: Wednesday, February 05, 2014 12:55 PM
Subject: Question about C. atrox venom and drug development

Hi Mr. Darnell,

I trust you and your snakes endured the cold snap that hit the southeast recently. That was something!

The Texas Parks and Wildlife Department continues to scope the issue of "gassing" and I am researching the use of C. atrox venom in drug development.

I have a letter from you indicating that C. atrox venom was used in the development of integrilin and captopril (unless I have misunderstood). I have not yet been able to verify that. I will continue to research this, but my preliminary efforts have found documentation indicating that integrilin was developed from pygmy rattlesnakes and captopril from the Brazilian viper. Would you be willing to point me to resources that clarify the role of C. atrox venom in the development of those drugs? I would greatly appreciate it.

Stay warm. We have another round of wintery mix predicted for tomorrow morning in Austin...

Sincerely,

John M Davis
Wildlife Diversity Program Director
4200 Smith School Rd
Austin, TX 78744
512-389-8587
john.davis@tpwd.texas.gov

Support Wildlife Diversity: buy a horned lizard license plate!
www.conservationplate.org

Attachments: Rattlesnake Texas.doc

----- Original Message -----
From: ken darnell
To: clayton wolf
Cc: Bryan W Law
Sent: Thursday, December 05, 2013 10:27 AM
Subject: antivenin not only important use of Texas Crotalus atrox venom

Hi Clayton

Attached is a document I gave to Texas non-game biologists several years ago during a meeting at your facility. I doubt it's still hanging around since I would be amazed your people wopuld push this agenda if they were informed. Your people were totally floored to find out about all of this. Matt even seemed bothered to learn about these important uses.

Essentially, the importance of this venom in research including new drug research dwarfs the value of antivenin even though I've personnally been very happy to have antivenin available once upon a time.

I've been lucky not to have needed the blood clot busting drug Integrilin developed from a study of pit viper venoms including Crotalus atrox venom I personnally produced. This billion dollar drug stops heart attack and stroke in progress and is used in emergency rooms all over the world daily. I can show you the patents if you'd like to see them.

The venom is also used all over the world in all kinds of research. I can show you hundreds of patents proving that, also.

The attachments are not on my computer but I could recreate them if necessary.

Hope you're having a nice weekend.

Ken Darnell

A BRIEF HISTORY OF TEXAS WESTERN DIAMONDBACK RATTLESNAKE *Crotalus atrox* VENOM PRODUCTION AND USE

INTRODUCTION

Western Diamondback Rattlesnake *Crotalus atrox* venom is the most important and most widely used North American snake venom in research and for antivenin production. Research using *C. atrox* venom has resulted in extraordinarily important drugs including antihypertensive and anti-clotting drugs used world-wide. Texas rattlesnakes have been used for production of most of the world's supply of *C. atrox* venom for at least the last twenty-five years. The overwhelming bulk of this Texas venom has been produced at Texas roundups, at Texas rattlesnake dealer facilities and at the homes of Texas rattlesnake hunters.

Evidence supportive of the foregoing is provided herein in the form of factual discussions of venom production and useage as well as exhibits showing use of Texas-produced *C. atrox* venom in research resulting in United States patents, in *Toxicon* articles and in antivenin production. Discussions of the inaccurate claims made by self-appointed and woefully uninformed rattlesnake roundup "critics" relative to venom produced at Texas roundups are included.

Copies of invoices of Bioactive Laboratories reflecting sales of *C. atrox* venom and evidentiary of an on-going relationship with the pioneer United States venom producer, Miami Serpentarium Laboratories, are appended as an exhibit. In an ongoing civil matter in the State of Georgia involving a complaint against an employee of the Georgia Department of Natural Resources (Civil Action File No. 05-CV-3846, Colquitt County Superior Court), all invoices reflecting Bioactive Laboratory venom sales since and including the year 2000 are of record including sales of *C. atrox* venom.

The fact of the utility of *C. atrox* venom produced at Texas roundups, at Texas rattlesnake dealer facilities and at the homes of Texas rattlesnake hunters is incontrovertible. Any consideration of the adoption of laws and/or regulations affecting the utility of the Texas "network" of roundups, dealers and rattlesnake hunters must consider the fact of the importance of this "network".

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THE IMPORTANCE OF AVAILABILITY

More important work has been accomplished world-wide through the use of Western Diamondback Rattlesnake *Crotalus atrox* venom than from any other venom. One important reason for this fact is the availability of *C. atrox* venom to researchers. Venom from *C. atrox* is readily available due in large part to the network of rattlesnake hunters, rattlesnake dealers and rattlesnake roundups in Texas. Although venom production for research or for any other purpose is not the primary intent of the network, *C. atrox* venom is a by-product which causes all other uses by man of the Western Diamondback Rattlesnake to pale to insignificance.

In contrast, Australia protects each and every species of animal including its venomous elapid snakes and actually throws very substantial obstacles in the way of legitimate Australian venom producers in their efforts to acquire venom-producing stock. Interestingly, venoms from Australian snakes have not produced the dramatic results gained from studies involving the much more available venom from *C. atrox* from Texas.

Could this difference in the importance of *C. atrox* venom world-wide as opposed to the highly protected Australian snakes be an unintended consequence of too stringent governmental regulation especially when populations of the involved species have not been shown by actual studies to be threatened?

THE MULTITUDE OF IMPORTANT USES OF WESTERN DIAMONDBACK RATTLESNAKE *Crotalus atrox* VENOM

Summary

Uses of substantial importance for *Crotalus atrox* venom can be documented in issued United States patents, in the literature including the technical journal *Toxicon* and in reference works such as Snake Venoms, Springer-Verlag. An estimated 90% of *Crotalus atrox* venom in such documentation is derived from Texas rattlesnakes. The overwhelming bulk of *C. atrox* venom produced in Texas is collected at rattlesnake roundups (particularly Sweetwater), at the facilities of rattlesnake dealers and at the homes of rattlesnake hunters. The venom of *C. atrox* is extraordinarily important to the health of all Texans. An important characteristic of *C. atrox* venom produced at Texas roundups, dealer facilities and homes of hunters is the exceptional quality of this venom caused by the fact that all such venom extractions are "first milkings" and venom so produced is of the highest quality that can be produced when compared to the quality of serial milkings.

Documentation

Use of Texas-produced Western Diamondback Rattlesnake *Crotalus atrox* venom as shown by issued United States Patents

As noted on the printout from the U.S. Patent Office website (Exhibit A), at least 250 United States Patents issued since about 1980 disclose *C. atrox* venom used in varying situations including, but not limited to:

(1) Use in studies at Cor Therapeutics, now Millennium Pharmaceuticals, to develop the extraordinarily important blood-clot "busting" drug, **Integrilin**, a drug now in use in virtually every hospital emergency room to stop heart attack and stroke in progress;

(2) Use in studies relating to **antivenin** improvement;

(3) Use in the laboratory to **sequence** or characterize complex oligonucleotides and polynucleotides;

(4) Us in studies of biological systems resulting in identification of proof of utility of potentially important **new drugs** for human treatments; and,

(5) Use as simple **reagents** in preparation of important chemical compounds.

These patents are issued to major entities including the United States of America, Glaxo Group Ltd., Burroughs Wellcom, Syntex, Eli Lilly, Calgene, Polifarma, S.p.A. of Italy, Carlsberg A/S of Denmark, Bristol Myers Squibb, W. R. Grace and academic institutions including the Universities of Maryland, California, Wisconsin and Washington as well as Iowa State University, Vanderbilt, the Hebrew University of Jerusalem and even the University of Texas, to name but a few.

United States Patents disclosing use of Western Diamondback Rattlesnake *Crotalus atrox* venom produced at Texas Roundups

At least 74 patents listed in Exhibit A can be clearly shown to have used *C. atrox* venom produced at Texas rattlesnake roundups, at Texas rattlesnake dealer facilities or at the homes of Texas rattlesnake hunters. The *C. atrox* venom used in these patents was produced by Bioactive Laboratories. Most of the *C. atrox* venom used in the patents listed in Exhibit A did not expressly identify the source of the *C. atrox* venom. In all likelihood, most of the work resulting in these other 175 patents used *C. atrox* venom produced in Texas either by Bioactive Laboratories or other entities using Texas rattlesnakes.

Exhibit B lists the United States patents issued since 1980 that have involved *C. atrox* venom prepared by Bioactive Laboratories with 95% of the venom coming from Texas rattlesnakes at Texas roundups, Texas rattlesnake dealer facilities or homes of Texas rattlesnake hunters.

Use of Texas-produced Western Diamondback Rattlesnake *Crotalus atrox* venom as shown by articles in the seminal journal *Toxicon*

Toxicon is only one journal among literally hundreds that publish scholarly research articles involving uses of venoms including Western Diamondback Rattlesnake *Crotalus atrox* venom. Note from a printout from the ScienceDirect website, Exhibit C, that 120 articles involving

research using *C. atrox* venom have been published in *Toxicon* since first publication of this journal about 35 years ago.

The uses of *C. atrox* as described in these articles mirror the uses disclosed in United States Patents and further include basic research of a nature not ordinarily found in patents. Without review of the text of each article on the *Toxicon* printout, it is estimated that 76 of the articles report research utilizing *C. atrox* produced by Bioactive Laboratories at Texas roundups, etc.

Antivenin Production using Western Diamondback Rattlesnake *Crotalus atrox* venom from Texas

A major use of *Crotalus atrox* venom apart from the many important uses in research and in new drug development is in the production of antivenin for treatment of venomous snake bite. While venom has not been produced at Texas roundups expressly for use in antivenin production, at least some Texas roundup-produced venom has undoubtedly been used by Wyeth Laboratories, no longer producing antivenin for human use, which purchased *C. atrox* venom primarily from Miami Serpentarium Laboratories. Since 1980, Miami Serpentarium Laboratories has purchased very large quantities of Texas roundup-produced *C. atrox* venom from Bioactive Laboratories, a relatively recent purchase being evidenced by an invoice (Exhibit D) and payment check (Exhibit E) to and from Miami Serpentarium Laboratories. Other such invoices exist.

Rattlesnake dealer-produced *C. atrox* venom was purchased by Protherics, producer of Cro-Fab, or its predecessor company Therapeutic Antibodies, sometime in the late '90's, this venom presumably being used in pre-clinical studies and in actual antivenin production. A Bob Larson of Protherics (801-433-2560) confirms purchase of *C. atrox* from one Don Bennett of Lorraine, Texas, Mr. Bennett informing that the amount purchased was 3800 grams (personal communications). Given the annual usage of about 300 grams of *C. atrox* venom by Protherics, the venom purchased from Mr. Bennett would still be in use unless discarded. No confirmation was available from Mr. Larson concerning continuing use of Mr. Bennett's *C. atrox venom.*

Uses of Western Diamondback Rattlesnake
***Crotalus atrox* venom from Reference Literature**

The reference work Snake Venoms, Springer-Verlag published in 1972 describes a variety of uses for *C. atrox* venom, these uses being still current even though the last 35 years has seen an explosion of uses developed for *C. atrox* venom as would be better seen in periodical literature. It is estimated that most of the *C. atrox* venom used in the underlying studies noted in Snake Venoms undoubtedly came from Texas, at least some coming from Texas roundups and rattlesnake dealers. Most of the basic uses described in the 1972 reference work are still valid, including:

(1) Use of phosphodiesterase from *C. atrox* to sequence, that is, characterize, the structures of complex amino acids and other oligonucleotides and polynucleotides;

(2) Use of phospholipase from *C. atrox* to:
- (a) hydrolyze phospholipids in red cell membranes;
- (b) analyze structures of phospholipids and triglycerides;
- (c) probe lipid-protein interactions;
- (d) increase polymerase activity in biological systems; and,
- (e) activate other enzymes in biological systems.

(3) Use as a source of anti-clotting disintegrins such as in the work of Cor Therapeutics in development of an important anti-clotting drug, Integrilin;

(4) Source of enzymes not mentioned above such as proteinase, arginine ester hydrolase, 5'-nucleotidase, L-amino acid oxidase and Bradykinin-releasing enzyme;

(5) Source of ACE inhibitors used in work at Squibb, now Bristol Myers Squibb, to develop Capoten for blood pressure reduction (Exhibits F, G, H and I) which are United States patents disclosing development of this important drug;

(6) Source of nerve growth factor, a potentially important compound used in studies involving degenerative diseases such as Alzheimer's disease; and,

(7) Used for effects in the laboratory on histamine and serotonin release.

Why the NTRC cannot supplant the present "Network" of Texas roundups, Texas dealers and Texas snake hunters in the production of the quantities of Western Diamondback Rattlesnake *Crotalus atrox* venom necessary for world-wide utilization

The NTRC produces venom from individual snakes for a very specific market. This market includes researchers who need to have genetic information from the same snake from which a potentially important compound has been found in that single snake's venom. This genetic information is necessary for production of monoclonal antibodies potentially useful for new drugs, new compounds useful in diagnostics or new compounds useful in the laboratory. No such new "products" have yet to be developed at NTRC or with the "single snake" venoms produced by NTRC.

Natural Toxins Research Center
Texas A&M Kingsville, Kingsville, Texas
Dr. John Perez

Dr. John Perez heads the NTRC and has been involved with snake venom studies since at least the early '70's. As a part of this work, Dr. Perez produced *C. atrox* venom at the Big Spring, Texas roundup from about 1972 until about 1985. This *C. atrox* venom was produced at the Big Spring Roundup in essentially the same manner as Bioactive Laboratories has produced venom at Texas roundups *inter alia* since the '80's, that is, extraction of large numbers of *C. atrox* into a "pool" followed by processing including lyophilization.

The venom produced by Dr. Perez at roundups contacted air as does the venom produced by Bioactive Laboratories and was subject to essentially the same conditions. In essence, all commercial "venom laboratories" produce venoms in the exact same way.

The "single snake" venoms produced by Dr. Perez at the NTRC also contact air. Obviously, contact of a venom while liquid with air does not in and of itself cause the venom to become useless as is often contended by misinformed roundup critics.

The Dallas-Fort Worth Herp Society substantially misquotes Dr. Perez in its website posting when Dr. Perez says he "wouldn't" use roundup-produced venom. It's a matter of "doesn't" use such venom since he now concentrates on monoclonal antibody technology. Perez states that the venom produced at NTRC could not be used for antivenin production, enzyme production, etc., since only very small quantities are produced.

The venom produced by Dr. Perez at roundups was shared with Dr. Charlotte Ownby who conducted research with it and wrote a number of published articles. The venom kept by Perez was primarily used in classroom work in demonstrations of equipment according to Dr. Perez.

Who *Are* These "Unbiased" Roundup Critics?

Dallas-Ft. Worth Herp Society and
Dr. John Perez, Texas A&M Kingsville

In an internet posting entitled "The Reality of Rattlesnake Roundups", an "unbiased" Michael Smith shows extreme bias with an initial statement that 25,000 people attend Sweetwater to see rattlesnakes "tormented and killed". Isn't it nice that Mr. Smith knows why these generally honest, hard-working Texans attend the Sweetwater roundup?

Smith goes on to state that school groups on Friday morning tours are subjected to decapitation of rattlesnakes. Never mind that snakes are not "processed" during school group shows. Actually, the kids are often subjected to political types lecturing on state government and maybe that's worse.

More importantly, Smith refuses to tell the whole truth about venom collection at the Sweetwater roundup. Please note the following:

(1) Any blood present in the venom "circuit" of a rattlesnake will be collected whether or not the snake is milked into an "open" funnel. Any such blood is present in the venom circuit before the snake is even handled and is not expressed from the venom glands by massaging. Rather, such blood would be ejected by the snake through the fangs in a natural bite.

(2) No proof exists that *Crotalus atrox* from differing locations must not be "pooled" although Smith attempts to quote Dr. Perez of the NTRC (see above) as making such a contention. Apparently, Dr. Perez was simply misunderstood according to my recent telephone conversation with Dr. Perez.

(3) No roundup critic or researcher has ever tested roundup-produced venom to show any sort of deficiency when compared to venom produced in any other venue.

The criticisms of roundup-produced venoms made by Smith are groundless yet he refuses to even communicate when evidence is produced showing the fallacies of his arguments.

As to the lack of education to be found at roundups, neither Smith nor any other of his ilk have the capability of providing accurate

information concerning venoms and venom uses as Ken Darnell has done at more than 150 roundups over the last 30 years.

Smith repeats another unproven mantra by noting that "published" scientific studies have raised questions about the sustainability of rattlesnake harvests in Texas. Smith doesn't bother to note that no studies exist that do any more than speculate since "studies" simply haven't occurred.

Kansas Herp Society

The "position paper" offered on the internet by the Kansas Herp Society mentions "studies" that don't exist and parrots the oft-repeated story of the "sadistic cruelty" by roundup organizers as evidenced by burning snakes with cigarettes, funneling liquor into snakes and even burning them in bonfires. These acts would be criminal if they ever occurred. The very use of terms such as "sadistic cruelty" conclusively illustrates the superior attitudes of roundup critics relative to the good people of the State of Texas. Interesting!

Note, however, that the current edition of the "position paper" does not even mention venoms collected at roundups. Early versions of this position paper irresponsibly threw around tired old and inaccurate statements about roundup-produced venom. The Kansas Herp Society removed such statements when they were shown conclusively more than ten years ago that such statements were inaccurate.

In doing so, the Kansas Herp Society is one of the few who actually decided to forego inaccurate criticisms. However, they did not apologize nor have they ever publicly admitted they were wrong.

United States Humane Society

The USHS is another organization putting out the idea that roundups are actually organized to "promote animal cruelty and environmentally damaging behavior" to quote their website. As to venoms, the tired old story is on their website to the effect that roundups claim to provide a source of venoms for antivenin production but fail to meet "stringent guidelines required by the U.S. Food and Drug Administration".

When questioned about sources, Belinda Mager of HSUS (646-469-4987) claims that HSUS has researched the situation and has a detailed "document" proving their position. However, after a request was made to see this document followed by a promise to send same to me, the "document" did not arrive. Call Andrea Cimino (202-452-1100) or Teresa Telecky.

HSUS simply parrots misinformation from other sources. No F.D.A. guidelines exist and, even if such guidelines existed, my business has not previously claimed use for antivenin production even though sales to Miami Serpentarium Laboratories and Biotoxins, suppliers to Wyeth and Protherics respectively, could have only been used for antivenin production due to quantities involved.

George VanHorn of Biotoxins, St. Cloud, Florida, (407 892-6905) has recently confirmed to me personally that my roundup-produced venom was used in the development of Cro-Fab. George even requested that I supply him with Eastern Diamondback Rattlesnake *Crotalus adamanteus* venom produced at the Claxton, Georgia roundup. George extracted perfectly useful venom himself at the Claxton roundup on one occasion when I was not available.

Website of Melissa Kaplan

Since at least the mid-90's, one Melissa Kaplan, a self-anointed "expert" on rattlesnake roundups, venoms and Ken Darnell, has attacked me personally for producing venom at rattlesnake roundups. Nothing Ms. Kaplan has claimed is true except for her claim that I had no college degree in biology. She was right. My undergraduate degree is in chemistry, a subject much more suited as background for venom production.

Amazingly, the state herpetologist of Georgia DNR, one John Jensen, joined the amateur critics in finding Ms. Kaplan's pronouncements to be credible as he stated under oath in a recent deposition. Jensen, as well as others, failed to determine just who Ms. Kaplan is. Perhaps they would have thought her unsuitable as a source of valid information if they had only looked a little closer and found Ms. Kaplan promoting on her other websites the elimination of men from the population of the world and the castration of teen-age boys as a means to eliminate the need for cervical cancer vaccine.

When Ms. Kaplan realized I had brought a civil action against an employee of Georgia DNR who used her website in an effort to discredit me, she removed the postings with the statement that no one should have listened to her in the first place.

It is remarkable that a number of people including people who should have known better gave credence to her uninformed postings.

You can reach Ms. Kaplan at 707-575-4170. Nothing she has ever said on her website concerning venoms is either factual or applies to my extraction methodology. She is apparently the source of the off-repeated F.D.A. guidelines argument.

David Barker, Captive Breeder, Boerne, Texas

An amiable roundup critic often quoted for his apparent claim that "500,000 rattlesnakes die at roundups annually." David denies making such a claim. His last contact with Texas roundups around 1985 led him to claim that 300,000 to 500,000 rattlesnakes were used "commercially" each year in Texas. Even this claim is extremely questionable and is not based on any sort of valid research. Texas rattlesnake business ventures could never utilize that number of rattlesnakes. The reporting requirements TPWD now has in place should negate such erroneous claims.

Who *IS* KEN DARNELL?

Owner and operator of Bioactive Laboratories for 30 years and arguably the producer doing that period of more *Crotalus atrox* venom than any other producer. About 90% of *C. atrox* venom produced by Bioactive Laboratories has been produced in Texas at rattlesnake roundups, at the facilities of rattlesnake dealers and at the homes of rattlesnake hunters.

Ken Darnell has a Bachelors in Chemistry from the Georgia Institute of Technology, 1967; worked on the patent staff of the Johns Hopkins University from 1967 until 1976 and has engaged in the private practice of patent law since 1976.

Venoms other than *C. atrox* have been purchased from Bioactive Laboratories by the United States government; the National Jewish Hospital, Denver, CO; several Texas Health Science Centers; a number of universities and Boehringer Mannheim of Mannheim, Germany, to name but a few. Gila Monster (*Heloderma suspectum*) venom used in the development of the new adult-onset, Type II diabetes drug Byetta was produced by Bioactive Laboratories in 1980 at the National Institutes of Health in the laboratory of Dr. John Pisano, this important new drug becoming available in 2005.

Presently working out of Gordon, Alabama where North American rattlesnakes and other crotalids are maintained for venom production.

Contact information:

Kenneth E. Darnell
bioactive laboratories
1975 Grimsley Road
Gordon, Alabama 36343

phone: (334) 522-4350
email: kdarnell@graceba.net

USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Searching US Patent Collection...

Results of Search in US Patent Collection db for:
SPEC/"crotalus atrox": 274 patents.
*Hits **1** through **50** out of **274***

Western Diamond Back

Next 50 Hits

Jump To

Refine Search spec/"crotalus atrox"

PAT. NO.	Title
1 8,901,103	Use of lipid conjugates in the treatment of diseases
2 8,865,878	Use of lipid conjugates in the treatment of diseases
3 8,784,813	L-amino acid oxidase with cytotoxic activity from Aplysia punctata
4 8,759,066	Thrombin activator compositions and methods of making and using the same
5 8,685,975	PDE10 inhibitors and related compositions and methods
6 8,541,551	Immunogen and antivenom against violin spider venom
7 8,457,900	Method for identification and sequencing of proteins
8 8,440,434	Polypeptides and biosynthetic pathways for the production of monatin and its precursors
9 8,404,710	Phosphodiesterase 10A inhibitor
10 8,383,787	Use of lipid conjugates in the treatment of diseases
11 8,377,930	PDE10 inhibitors and related compositions and methods
12 8,377,887	Methods of reducing hypoxic stress in a mammal by administering soluble P-selectin
13 8,372,989	Polypeptides and biosynthetic pathways for the production of monatin and its precursors
14 8,343,970	PDE10 inhibitors and related compositions and methods
15 8,338,420	Treatment of Parkinson's disease and enhancement of dopamine signal using PDE 10 inhibitor
16 8,304,395	Lipid conjugates in the treatment of disease
17 8,287,860	Immunogen and antivenom against violin spider venom

18 8,278,327 T PDE10 inhibitors and related compositions and methods
19 8,278,265 T Methods, kits and compositions comprising crotamine
20 8,206,955 T Production of monatin and monatin precursors
21 8,202,880 T 3-hydroxy-6-phenylphenanthridines as PDE4 inhibitors
22 8,198,295 T Benzonaphthyridines
23 8,183,201 T Methods of treating .alpha.v.beta.3 integrin-associated diseases by administering polypeptides selective for .alpha.v.beta.3 integrin
24 8,158,165 T Preventative treatment and remission of allergic diseases
25 8,129,401 T Heterocyclic compounds useful for the treatment of inflammatory and allergic disorders; process for their preparation and pharmaceutical compositions containing them
26 8,076,312 T Use of lipid conjugates in the treatment of disease
27 8,048,414 T Antivenom composition containing Fab fragments
28 8,012,731 T Phosphodiesterase and gene thereof
29 8,008,060 T Method for growing Cordyceps sinensis on a substrate
30 7,943,728 T Disintegrin variants and their use in treating osteoporosis-induced bone loss and angiogenesis-related diseases
31 7,943,634 T Substituted benzo[4,5]furo[3,2-c]pyridine derivatives as PDE 4 inhibitors
32 7,939,064 T Phospholipase(s) and use(s) thereof
33 7,893,226 T Use of lipid conjugates in the treatment of diseases
34 7,846,942 T Phosphodiesterase 10A inhibitor
35 7,811,999 T Use of lipid conjugates in the treatment of diseases
36 7,786,139 T PDE10 inhibitors and related compositions and methods
37 7,772,196 T Use of lipid conjugates in the treatment of diseases
38 7,763,617 T Pyrazolopyridine-4-yl pyridazinone derivatives and addition salts thereof, and PDE inhibitors comprising the same derivatives or salts as active ingredient
39 7,754,215 T Antithrombotic therapy with antibodies binding to the A3 domain of von Willebrand factor (VWF)
40 7,718,615 T Contortrostatin (CN) and methods for its use in preventing metastasis and other conditions
41 7,704,718 T Method of reducing the viscosity of mucus
42 7,671,068 T N-(alkoxyalkyl) carbamoyl-substituted 6-phenyl-benzonaphthyridine derivatives and their use as PDE 3/4 inhibitors
43 7,632,844 T 2-hydroxy-6-phenylphenanthridines as PDE-4 inhibitors
44 7,589,062 T Two synthetic peptides for treatment and prevention of cancers
45 7,572,607 T Polypeptides and biosynthetic pathways for the production of monatin and its precursors
46 7,547,821 T Methods for the production of insulin in plants
47 7,531,540 T Phthalazinone-piperidino-derivatives as PDE4 inhibitors
48 7,504,384 T Use of lipid conjugates in the treatment of infection
49 7,470,704 T Benzonaphthyridines
50 7,423,046 T 3-hydroxy-6-phenylphenanthridines as pde-4 inhibitors

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Refine Search spec/"crotalus atrox"

	PAT. NO.	Title
51	7,407,795	Method for growing Cordyceps sinensis on a substrate and novel method for hybridizing different strains of Cordyceps sinensis
52	7,407,784	L-amino acid oxidase with cytotoxic activity from Aplysia punctata
53	7,393,938	Use of lipid conjugates in the treatment of diseases
54	7,393,846	Heterocyclic compounds useful for the treatment of inflammatory and allergic disorders
55	7,384,962	Heterocyclic compounds useful for the treatment of inflammatory and allergic disorders; process for their preparation and pharmaceutical compositions containing them
56	7,332,317	Phosphodiesterase and genes thereof
57	7,329,676	2-hydroxy-6-phenylphenanthridines as PDE-4 inhibitors
58	7,329,517	Escapin protein, a broadly antimicrobial compound from ink of the sea hare Aplysia californica, and uses thereof
59	7,264,922	Method of reducing complement - mediated disruption of cells
60	7,238,725	Tricyclic compounds useful for the treatment of inflammatory and allergic disorders; process for their preparation and pharmaceutical compositions containing them
61	7,223,789	Heterocyclic compounds useful for the treatment of inflammatory and allergic disorders; process for their preparation and pharmaceutical compositions containing them

62 7,220,746 Pyrrolidinedione substituted piperidine-phthalazones as PDE4 inhibitors
63 7,220,724 T Conotrotstatin CN and methods for its use in preventing metastasis and other conditions
64 7,217,527 T Assay for phosphodiesterase function
65 7,214,479 T E. coli O157:H7 C1-INH-binding protein and methods of use
66 7,208,150 T Analgesic from snake venom
67 7,183,258 T Two synthetic peptides for treatment and prevention of cancers
68 7,179,810 T Phthalazinone-piperidine derivatives as PDE4 inhibitors
69 7,176,229 T Cyclic AMP-specific phosphodiesterase inhibitors
70 7,141,552 T Use of lipid conjugates in the treatment of diseases
71 7,135,317 T Polynucleotides encoding desintegrin homologs, and related products
72 7,132,554 T Carboline derivatives
73 7,122,362 T Phosphodiesterases
74 7,115,621 T Chemical compounds
75 7,105,506 T Tetracyclic compounds as PDE5-inhibitors
76 7,101,859 T Use of lipid conjugates in the treatment of diseases
77 7,098,209 T Pyrazino [1'2':1,6] pyrido [3, 4-b] indole-1,4-dione derivatives
78 7,087,634 T Cyclic AMP-specific phosphodiesterase inhibitors
79 7,087,213 T Method of preparing cow brain homogenate
80 7,034,027 T Fused heterocyclic derivatives as phosphodiesterase inhibitors
81 7,034,006 T Use of lipid conjugates in the treatment of disease
82 7,033,601 T Composition and method for repelling squamate reptiles
83 7,022,856 T Carboline derivatives
84 7,022,696 T Piperazino-derivatives and their use as PDE4 inhibitor
85 6,998,416 T Cyclic AMP-specific phosphodiesterase inhibitors
86 6,992,192 T Carboline derivatives as PDE5 inhibitors
87 6,984,641 T Carboline derivatives as PDE5 inhibitors
88 6,962,918 T Hexahydropyrazino[1'2':1,6]pyrido[3,4-b]indole-1,4-diones for the treatment of cardiovascular disorders and erectile dysfunction
89 6,960,587 T Condensed pyrazinedione derivatives as PDE inhibitors
90 6,953,853 T Phthalazinone-piperidino-derivatives as PDE4 inhibitors
91 6,943,166 T Compositions comprising phosphodiesterase inhabitors for the treatment of sexual disfunction
92 6,936,622 T 6-phenylbenzonaphthyridines
93 6,936,423 T Anti-LTNF for in vitro assay of biological toxins
94 6,933,296 T Compounds effective as .beta.2-adrenoreceptor agonists as well as PDE4-inhibitors
95 6,929,921 T Antibody which binds human blue-light photoreceptor hCRY2
96 6,911,542 T Pyrazino[1',2':1,6]pyrido[3,4b]indole derivatives
97 6,903,099 T Condensed pyrazinedione derivatives
98 6,884,802 T 6-heteroarylphenanthridines

99 6,878,711 T Indoki derivatives as PDE5-inhibitors

100 6,875,577 T Method of preparing cow brain homogenate

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101 6,872,721	Derivatives of 2,3,6,7,12,12a-hexahydropyrazino-[1',2':1,6]pyrido[3,4b]-indole-1,4-dione
102 6,864,070	Phosphodiesterase 10
103 6,858,714	Cyclic GMP phosphodiesterase
104 6,858,620	Condensed pyridoindole derivatives
105 6,846,821	Tetrahydrothiopy ranphthalazinone derivatives as PDE4 inhibitors
106 6,838,456	Condensed pyridoindole derivatives
107 6,825,197	Cyclic GMP-specific phosphodiesterase inhibitors
108 6,762,044	Mammalian adhesion protease peptides
109 6,756,371	Phthalazinone derivatives as PDE4 inhibitors
110 6,753,309	Nucleosides for imaging and treatment applications
111 6,734,003	Phosphodiesterase 10
112 6,716,871	Cyclic AMP-specific phosphodie sterase inhibitors
113 6,710,030	Contortrostatin (CN) and methods for its use in preventing metastasis and other conditions
114 6,703,374	Nucleosides for imaging and treatment applications
115 6,683,045	Nucleosides for imaging and treatment applications

116 6,682,715 Nucleosides for imaging and treatment applications
117 6,680,336 T Cyclic AMP-specific phosphodiesterase inhibitors
118 6,677,315 T Nucleosides for imaging and treatment applications
119 6,677,314 T Nucleosides for imaging and treatment applications
120 6,677,125 T Assay for disease related conformation of a protein and isolating same
121 6,673,340 T Basement membrane degrading proteases as insect toxins and methods of use for same
122 6,630,483 T Phenanthridine-N-oxides
123 6,630,139 T Fibrinogenolytic proteases with thrombolytic and antihypertensive activities, medical application and novel process of expression and production
124 6,613,326 T Antitoxins and methods for making antitoxins
125 6,610,270 T In vivo determination of metabolic function for use in therapy management
126 6,569,994 T Human blue-light photoreceptor hCRY2
127 6,569,890 T Cyclic AMP-specific phosphodiesterase inhibitors
128 6,569,885 T Cyclic AMP-specific phosphodiesterase inhibitors
129 6,555,109 T Analgesic from snake venom
130 6,544,993 T Tetrahydrothiopyranphthalazinone derivatives as PDE4 inhibitors
131 6,538,005 T Phenanthridine-N-oxides with PDE-IV inhibiting activity
132 6,534,519 T Phenanthridine-N-oxides with PDE-IV inhibiting activity
133 6,534,518 T Polysubstituted 6-phenylphenanthridines with PDE-IV inhibiting activity
134 6,500,856 T Cyclic AMP-specific phosphodiesterase inhibitors
135 6,492,371 T Use of cyclic GMP-specific phosphodiesterase inhibitors for treatment of Parkinson's Disease
136 6,486,186 T Thiazole compounds as cyclic AMP-specific phosphodiesterase inhibitors and method of using the same
137 6,479,505 T 6-arylphenanthridines with PDE-IV inhibiting activity
138 6,476,025 T Phenylphenanthridines with PDE-IV inhibiting activity
139 6,461,841 T L-amino acid oxidase from Rhodococcus species
140 6,458,787 T Cyclic AMP-specific phosphodiesterase inhibitors
141 6,455,562 T Cyclic AMP-specific phosphodiesterase inhibitors
142 6,451,807 T Methods of treating sexual dysfunction in an individual suffering from a retinal disease, class I congestive heart failure, or myocardial infarction using a PDE5 inhibitor
143 6,444,671 T Cyclic AMP-specific phosphodiesterase inhibitors
144 6,440,695 T Method for producing diverse libraries of encoded polypeptides
145 6,436,952 T Benzonaphthyridine-N-oxides comprising a PDE3 and PDE4 inhibiting activity
146 6,423,710 T Cyclic AMP-specific phosphodiesterase inhibitors
147 6,420,154 T Mammalian adhesion protease peptides
148 6,410,551 T Tetrazole derivatives
149 6,399,355 T Non-naturally occurring targeted lipolytic compounds and related compositions and methods
150 6,384,047 T Benzonaphthyridine

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151 6,380,196	Dihydrobenzofurans
152 6,376,489	Cyclic AMP-specific phosphodiesterase inhibitors
153 6,376,485	Benzoxazoles with PDE-inhibiting activity
154 6,372,777	Cyclic AMP-specific phosphodiesterase inhibitors
155 6,362,213	Cyclic AMP-specific phosphodiesterase inhibitors
156 6,350,603	Phosphodiesterase 10
157 6,348,602	Cyclic AMP-specific phosphodiesterase inhibitors
158 6,313,156	Thiazole compounds as cyclic-AMP-specific phosphodiesterase inhibitors
159 6,306,869	N-oxides
160 6,306,867	Imidazo- and oxazolopyridines
161 6,303,789	Benzamides with tetrahydrofuranyloxy substituents as phosphodiesterase 4 inhibitors
162 6,294,564	Benzimidazoles and benzoxazoles
163 6,294,561	Cyclic AMP-specific phosphodiesterase inhibitors
164 6,271,533	Method and an electronic device for repelling infrared-sensitive snakes
165 6,265,199	Disintegrin homologs

166 6,258,833 Cyclic AMP-specific phosphodiesterase inhibitors
167 6,255,456 T Cyclic GMP phosphodiesterase
168 6,255,303 T Phthalazinone PDE III/IV inhibitors
169 6,214,839 T Substituted 6-alkylphenanthridines
170 6,214,594 T Size enhanced fibrinolytic enzymes: limitations of plasma inactivation
171 6,207,168 T Vaccine composition for herpes simplex virus and methods of using
172 6,191,138 T Phenanthridines
173 6,187,579 T Customized proteases
174 6,180,639 T 1,3-oxathiolane nucleoside analogues
175 6,172,074 T Imidazopyridines and oxazolopyridines
176 6,143,759 T Tetrazoles
177 6,127,378 T Phenanthridines substituted in the 6 position
178 6,121,279 T Substituted 6-phenylphenanthridines
179 6,114,503 T Human blue-light photoreceptor hCRY2
180 6,103,718 T Phthalazinones
181 6,100,025 T Cloning by complementation and related processes
182 6,093,568 T Plant lysophosphatidic acid acyltransferases
183 6,080,548 T Cyclic nucleotide phosphodiesterases
184 6,057,297 T Inhibitor compounds of zinc-dependent metalloproteinases associated with pathological conditions, and therapeutic use thereof
185 6,054,475 T Substituted dihydrobenzofuran-based phosphodiesterase 4 inhibitors useful for treating airway disorders
186 6,054,131 T Vaccine composition for herpes simplex virus and method of using
187 6,037,119 T Cyclic GMP-binding, cyclic GMP-specific phosphodiesterase materials and methods
188 6,008,215 T Benzonaphthyridines as bronchial therapeutics
189 5,985,833 T Thrombin inhibitor
190 5,977,305 T Cloning by complementation and related processes
191 5,968,902 T Platelet aggregation inhibitors
192 5,968,791 T Plant lysophosphatidic acid acyltransferases
193 5,958,732 T Platelet aggregation inhibitors
194 5,955,584 T Atherosclerotic plaque specific antigens, antibodies thereto, and uses thereof
195 5,955,583 T Antibodies to cGMP-binding, cGMP-specific phosphodiesterase
196 5,945,329 T Customized proteases
197 5,935,926 T Platelet aggregation inhibitors
198 5,932,423 T Cyclic nucleotide phosphodiesterases
199 5,922,595 T Cyclic GMP phosphodiesterase
200 5,910,630 T Plant lysophosphatidic acid acyltransferases

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PAT. NO.	Title
201 5,904,922	Treatment with polyvalent antivenom containing immunoglobulin which is greater than 50% venom-reactive
202 5,856,126	Peptide having anti-thrombus activity and method of producing the same
203 5,852,198	Wittig reagents and method for preparing alpha, beta-unsaturated phosphonates
204 5,846,755	Method for determining the therapeutic activity of metalloproteinase inhibitor compounds
205 5,843,897	Platelet aggregation inhibitors
206 5,824,858	Plant lysophosphatidic acid acyltransferases
207 5,811,248	Atherosclerotic plaque specific antigens, antibodies thereto, and uses thereof
208 5,807,825	Platelet aggregation inhibitors
209 5,786,333	Platelet aggregation inhibitors
210 5,770,564	Platelet aggregation inhibitors
211 5,759,999	Platelet aggregation inhibitors
212 5,756,451	Platelet aggregation inhibitors
213 5,747,447	Stable polypeptide composition
214 5,744,584	Antithrombosis agents

215 5,244,439 T Lethal toxin neutralizing factors

216 5,739,274 T Active component of parathyroid hypertensive factor

217 5,736,339 T Method utilizing purified GP IIb-IIIa to detect the presence of platelet aggregation inhibitors

218 5,723,463 T Pyrido[3,2-E]pyrazinones with anti-asthmatic action and processes for their manufacture

219 5,716,954 T Benzopyridazinone and pyridopyridazinone compounds

220 5,702,936 T Cyclic GMP-binding, cyclic GMP-specific phosphodiesterase materials and methods

221 5,686,574 T Platelet aggregation inhibitors

222 5,686,570 T Platelet aggregation inhibitors

223 5,686,569 T Platelet aggregation inhibitors

224 5,686,568 T Platelet aggregation inhibitors

225 5,686,567 T Platelet aggregation inhibitors

226 5,686,560 T Platelet aggregation inhibitors

227 5,679,542 T Antithrombosis agents

228 5,656,602 T PLA sub.2 inhibitory compounds

229 5,652,131 T Cyclic GMP-binding, cyclic GMP-specific phosphodiesterase materials and methods

230 5,614,504 T Method of making inosine monophosphate derivatives and immunopotentiating uses thereof

231 5,576,297 T Embodiments of natural and synthetic lethal toxin neutralizing factors and their utility as treatment for envenomation

232 5,565,431 T Cancer cell inhibitors and method

233 5,563,058 T Plant lysophosphatidic acid acyltransferases

234 5,552,530 T Antibodies that specifically bind to and inhibit human synovial phospholipase A sub.2 type A

235 5,543,422 T Heterocyclic amines

236 5,530,005 T Method of use of 8-phenylcyclopentenoquinoline and 8-phenylcyclohexenoquinoline derivatives

237 5,496,724 T Genes encoding platelet aggregation inhibitors

238 5,475,003 T 8-phenylcyclopentenoquinoline and 8-phenylcyclohexenoquinoline derivatives

239 5,466,697 T 8-phenyl-1,6-naphthyridin-5-ones

240 5,455,252 T Optionally substituted 6,8-quinolines

241 5,443,976 T Immobilization of Crotalus atrox and Crotalus durissus terrificus whole venoms on aldehyde activated agarose

242 5,344,783 T Platelet aggregation inhibitors

243 5,342,830 T Antithrombosis agents

244 5,340,923 T Methods for making and purifying antivenoms

245 5,318,899 T Platelet aggregation inhibitors

246 5,279,937 T Use of macroglobulins to improve the signal-to-background ratio in affinity binding assays

247 5,264,437 T Optionally substituted pyrido[2,3-d]pyridine-2,4(1H,3H)-diones and pyrido[2,]pyrimidine-2(1H,3H)-ones

248 5,260,060 T Fibrinolytic enzymes

T

249 5,232,911 Mixture of a non-covalent heterodimer complex and a basic amphiphilic peptide as cytotoxic agent

250 5,200,435 T 4-amino-2-cyclopentene-1-methanol

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PAT. NO.	Title
251 5,196,193	Antivenoms and methods for making antivenoms
252 5,143,903	Method of treatment with tripeptide pharmaceutical compositions as immunomodulators
253 5,104,909	Naphthalene based snake repellant
254 5,089,500	Therapeutic nucleosides
255 5,087,697	Therapeutic nucleosides
256 5,034,394	Therapeutic nucleosides
257 5,019,508	Synovial phospholipases
258 5,002,963	3-indolylpyruvic acid derivatives and pharmaceutical use thereof
259 4,857,531	Guanine derivatives
260 4,849,352	Antibody purification process
261 4,810,779	Decapeptides having hypotensive action and process for their preparation
262 4,806,346	Method for isolation of antigen specific immunoglobulin
263 4,789,670	Method and compositions for suppression of atherogenesis utilizing cholesterol hydroperoxides
264 4,774,318	Snake venom growth arresting peptide
265 4,748,155	Pharmacologically active tripeptides and process for their synthesis
266 4,731,439	Snake venom growth arresting peptide

267 4,672,107 Cell growth inhibitor and method

268 4,515,781 T 2',5'-Riboadenylate-morpholinoadenylate nucleotides

269 4,443,472 T Method of treating mammals for effects of neuro- and cardiovascular toxins

270 4,375,431 T Aluminum treated proteins

271 4,371,611 T Enzymatic diagnostic composition

272 4,154,656 T Method for determining the fibrinogen content of physiological liquid

273 4,093,617 T 3,5,7-Trisubstituted pyrazolo[1,5-a]pyrimidines

274 4,036,840 T 2-Substituted s-triazolo[1,5-a]pyrimidines

REFERENCES

Arena, P.C.; Warwick, C.; and Duvall, D. (1995). *Chapter 19: Rattlesnake Round-ups*. Wildlife and Recreationists, Island Press: Washington, D.C., p. 313-324.

Elliott, W.R. (2000) Conservation of the North American cave and karst biota. In: Wilkens H, Culver DC, Humphreys WF (eds.) Subterranean Ecosystems. Elsevier, Amsterdam, pp 665-689.