February 2009 Vol. XII No. IV

The Buzzword

West Sound Beekeepers Association
westsoundbees.org

February Refreshments

Gene Hart

Next meeting:

Tuesday, February 17 At The Stedman's

5:45 PM Journeyman Studies

6 PM Bee-ginners Class

7 PM Regular Meeting

Queen Rearing Group meets after the Regular Meeting

Program:

George Purkett

Population explosion from Package to Production

President, Webmaster
George Purkett .360 895 9116

VP; Queen Rearing Group Leader
David Mackovjak .360 698 5228

Secretary
Judy Gunther .360 297 5075

Treasurer
Dennis Heeney .206 842 5545

Educational Materials
Barbara Stedman .360 692 9453

Education Chairman
Paul Lundy .360 297 6743

Librarian
Roy Barton .360 613 0175

Newsletter Editor
Basil Gunther .360 297 5075

Journeyman Study Group Leader
Jim Dunbar . 360-286-5359

What's Inside:

Minutes from the January 20, 2009 meeting

Submitted by Michelle McMullen
George Purkett presided

Treasurer's Report:

No Report this month: Dennis is working on 2008 Annual Report

Education Committee:

It was decided to have the Journeyman Study Group meet at 5:45 PM before the Beeginners Class at 6 PM before our Regular Meetings at 7 PM.

New Business

Regarding the complaints of a neighbor about the current site of the apiary, it was determined that we should discuss with Barb a more appropriate locale, on site but out of the way.

At The Meeting

Michelle McMullen

Welcome
Welcome to first time visitors Lilach Somberg, Mike and Tami Henig, Dianne Pechia and Emily Pechia, Randy Raub, and Tim Cecleski. All expressed an interest in classes and membership.

Tim is a former president of Puget Sound Beekeepers Association and it was noted that his experience and knowledge will be greatly appreciated.

Journeyman Study Group
The new Journeyman program was discussed. It was decided that those interested will meet on our regular meeting night of the third Tuesday of the month at 5:45 PM. They will have a few minutes with Paul Lundy and continue their study group while the beginner's class is conducted. The Journeyman study group will give presentation for the regular bee meetings beginning in March. The first Journeyman study group will be Tuesday the 17th at 5:45 PM.

Christmas Dinner
Those who attended the Christmas dinner and auction seemed to enjoy the evening. They commented on the good food and company. Some mentioned how far out the location was and how it would be nice to find a location near Silverdale that was more like the ambience of the Red Barn in Belfair and less like the chain restaurants so prevalent in Silverdale.

The auction held during the Christmas dinner/party raised $219.50. George reminded us that, that is enough to fund our yearly scholarship.

Treasurer's Report
Dennis let us know that there would be no report at this meeting as he is still working on the 2008 yearly figures. We can expect a report next month.

The Al Stedman memorial fund was brought up. At Al's passing it was requested that in lieu of flowers, donations be directed to the Association's scholarship fund. The amount donated in Al's memory was $760.00.

Paul gave us the figures and mentioned Barbara Stedman's request that the Association send thank you cards to those who donated. The room was filled with expressions of gratitude.

Continued on page 6

The presentation at this meeting is titled "Population explosion from Package to Production". George is going to present the changes in the population of a hive as it is started from a package of bees and how it would be affected by vigorous laying queen and a less than vigorous queen. What help can the beekeeper provide as the population grows and the hive matures. What are some specific challenges for the first year hive. Some pictures will be added so it is not dead boring. A graph may be added for the artistic. Who knows, maybe we will learn something.
George

Message From The President

I will try to focus but thoughts are going through my head faster than I can type. First, I hope you have started the year by opening your hives and checking for life and winter stores to get the bees all the way till spring so they can brag about what a wonderful keeper you are. I have found 3 of my hives dwindled to a small handful of bees; then perished. 'Tis too late for them, they will not get me any bragging rights. I have (3) 4-frame nucs that appear to be thriving. They were an experiment to see if a nuc would make it through the winter. The coldest season is far from over, but my hopes for them are high.

Last year was a great year for leveraging our association apiary. It provided a valuable resource to the beginner field days and to the queen rearing events. Thanks to all those that took the time to participate and share in our learning endeavors. I have a few hopes for this year. One hope is that the fair committee help us begin to engage the public more this year and become a little more visible to the community. Another hope is that the Journeyman Study group help us target presentations and perhaps a field day or two in order to expand our general knowledge beyond the scope of beginner and/or experimenter to more of a practiced (i.e. experienced) approach. Yet another hope is an idea I had the other day flipping through channels on the TV remote where I found a locally produced program on mycology. It gave me the thought that the association could try to produce a beekeeping program for the local access channel. I'm not sure what it would involve; it could be informative and possibly fun. Looking for volunteers to run with this one to see what it would take.

A quick note about info on the web, American Bee journals 1861 – 1892 are reachable and readable on the web at *http://bees.library.cornell.edu/b/bees/* if you have time to read them. They are very informative and entertaining.

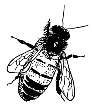
And now for another call to action. If you can think of something this association should be doing or should be doing better please let us know. And if you are willing to step up and help, please do that as well. The more participation and action we have really helps to invigorate the rest of us.

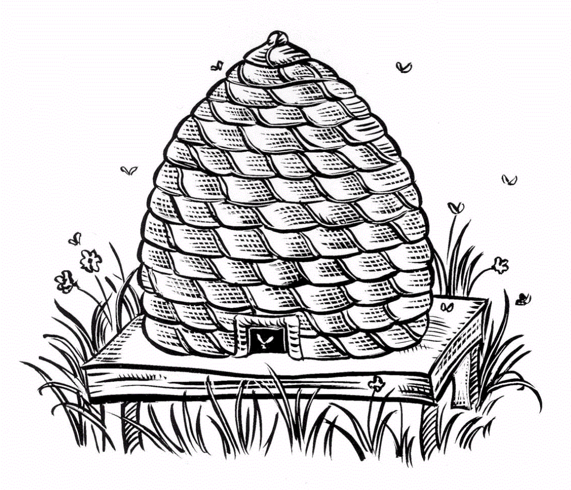
George,

And a poem

'Tis the bees' delight to buzz and bite-
They're always spoiling for a fight,
And always sure to win it.
They'll knock the music out of a poet.
They'll make a rheumaticky subject go it,
Though he couldn't stir a peg he'd shin it-

Eugene Secor 1886

 Interested in Honey Bees?



Come to the West Sound Beekeepers Association and learn more about Honey Bees and Beekeeping.
Keeping honeybees is enjoyable and fun. Learn more about the wonderful World of nature's pollinators. We have Bee-ginner classes that help you with Practical techniques to keep honeybees successfully.
We meet regularly at Stedman's Bee Supply in Silverdale (across from Central Kitsap High School) every third Tuesday at 7PM.

Once again, we'll do beekeeping classes for 2009. Classes are from 6:00pm to 6:45pm on the 3rd Tuesday of the month at Stedman's Bee Supplies in Silverdale…just prior to the meetings. In February the regularly scheduled beginning bee keeping course will begin. The cost is $10 for the study guide and $24 for one-year membership in West Sound Beekeepers Association. The course covers everything you need to know and do in the first year keeping honeybees. There is no charge for the exam.

West Sound Beekeepers Association

Westsound-Bees.org

Bee-ginner Classes Start in Feb. 6 PM
Regular Meeting 7PM 3rd Tuesdays At Stedmans Bee Supplies Silverdale

3763 NW Anderson Hill Rd

More info: 360-297-6743

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On the preceding page is a flyer designed to help people find the meeting and take beekeeping classes.

- **Print Flyers and membership coupons from this PDF or with Word Document sent with newsletter.**
- **Cut between the tags so people can remove them easily.**
- **Post where they will be seen! Post offices, coffee shops, grocery stores, feed stores, garden centers, libraries, etc...**
- **Pay your dues for 2009 and return with coupon below. Be sure to complete the coupon so your information is up to date!**
- **Thank-you for supporting Beekeeping!**

2009 Bee-ginner Class Schedule

- **Feb 17 The Honey bee and her products**
- **Mar 17 Beekeeping equipment and making a start in beekeeping**
- **Apr 11 12:00 Field day at Stedmans to install package bees. (subject to package arrival)**
- **April 21 Spring management and pollination**
- **May 19 Swarming and Queen Rearing**
- **May 23 Beginner Field Day, Spring Management**
- **June 16 Summer management and honey production**
- **June 20 Beginner Field Day, Spring Management**
- **July 21 Diseases and pests**
- **July 25 Beginner Field Day, Mite detection**
- **(Aug no class) Aug 18, Summer Picnic**
- **Sept 15 Fall Management and Marketing**
- **Sept 19 Field Day, preparing hives for winter**
- **Oct 20 Last Class and open book exam**

Time to Renew your membership!

☑ **Yes! I want to be a member of West Sound Beekeepers' Association during 2009. I have enclosed a check payable to West Sound Beekeepers Association Check one:** ☐ $24 annual household membership dues ☐ $34 Bee-ginner class fee ($24 membership dues + $10 study guide)

NAME(S): _____

MAILING

ADDRESS: _____

PHONE: _____ **EMAIL:** _____

I would prefer to receive **email / snail mail** version of the newsletter **(circle preference)**

Please return to:

Dennis Heeney, WSBA Treasurer, 5350 Welfare Av, Bainbridge Island, WA 98110

At The Meeting *continued from page 2*

George inquired as to the priorities of the Association; asking what would be important to us this year. Noting that 2008 was the first year that an actual budget was implemented, George pointed out that the yearly figures from 2008 will show us how close we came to meeting the budget. He reminded us of our financial commitments in 2008, which were the following.

FIXED COMMITMENTS
- Newsletter
- Scholarship
- Website
- State Association Membership

NON-FIXED COMMITMENTS
- Association Apiary
- Library Materials
- Guest Speaker costs
- Door Prizes
- Picnic

The non-fixed financial commitments were discussed. The question was raised as to if we should continue having door prizes or should we have a raffle. It was mentioned that having a door prize was fun and that it fosters excitement to all who attend. Some felt that a raffle may be an inconvenience in financially troublesome times. It was indicated that perhaps we might also include items in our drawing that have broad appeal to those who attended and currently do not have hives, items such as honey or products. Library materials and the funds allocated to them where discussed next. For the benefit of those visiting for the first time; the procedure for the library check out and particulars were given.

We deliberated regarding the materials that could be included in the Association's Library such as the NOVA's movie on the life of the honeybee. The Association's purchasing of magazine subscriptions was suggested. The association members are entitled to discount subscriptions. Members were encouraged to purchase their own subscriptions, as much of the monthly articles are time sensitive and would only be available to the one member who checked out the magazine. Bee Culture and American Bee Journal were recommended.

Our choices and process for library material selection were brought into question. It was suggested that a committee or faction of the Association such as the Journeyman's group recommend future additions to the Library. Since the Journeyman's group will be required to do much reading it was suggested that they guide what recourses are added.

The Association's apiary was touted as the most expensive cost. It was praised as an excellent teaching tool. The inability to successfully keep hives alive was brought into question. Lack of fall preparation, inspections, and management was blamed. In 2008, however, the hives were given much more attention.

Tim, having many years know-how with the Puget Sound Bee Keepers Association gave insight into the importance that apiaries played in his prior association. The PSBA's apiaries are pollinators of the Washington Park's Arboretum in Seattle. The apiaries, called the, "Bee Garden," are located behind the visitor's center. Originally the apiaries were the resting place for local swarms. The association profited with many hives and a large crop of honey. Now the apiaries are mostly teaching tools. They have approximately 10 hives and in 2008 underwent an overhaul of sorts; rebuilding fences, hives and disseminating public information.

Tim outlined a few of the interesting apiary programs available to their members. Early in the year individuals interested in beekeeping and wanting a chance to, "get their feet wet," can participate in the, "Adopt A Hive Program." In this program mentorship and hands on experience is given to those who may not have hives of their own yet but are interested in learning more before making the investment. This opportunity benefits the beginner, and provides care for the hives.

Another use of the apiaries in PSBA was public education. Members have access to observation hives for presentations. The apiaries are also used for field days and experimentation.

The status of our hives was brought up. It was said that we have six total hives (including one top bar hive and two weak colonies now under Paul's supervision.) Four of the hives were actively used for queen rearing (two of these were purchased for the purpose of queen rearing). It was noted that the queen rearing group broke even for last year.

As we look to 2009; the apiaries again, it was said, will consume material costs. Old bee boxes and frames were acquired, however, they are in need of work and new frames will be needed. There was also the concern regarding the location. Last year it seems that a neighbor had complained about the bees. The same neighbor apparently expressed their appreciation of the bees as well. The location was a concern as it was in the direct path of workers at Stedman's. It was determined that we should discuss with Barb a more appropriate locale, on site but out of the way.

Current Bee Care
Currently many in the group were concerned with winter care of the bees. Weighing hives to determine stores and feeding were brought up. Some members have been busy feeding fondant to their hives. Others are using what is known as the mountain camp method. In this method of winter feeding, discussed in the six-o-clock meeting of potential journeyman, a super is placed on the hive and a layer of news paper or paper towels are laid on the hive with about a two inch gap in the front. Paul recommended that a ten-pound bag of sugar be poured on top and the front section be sprayed with a bit of water to keep the sugar from falling down into the frames below. The advantage to this method, besides feeding the bees, is the absorption of moisture and condensation from the hive.

There seemed to be no winter calamities in the aftermath of the snowstorms among our member's hives. In fact, some had great success this year and seemingly into the winter. Many remarked on the beauty of the snow about the hives.

The feeding of pollen substitutes was brought up; the benefits being the build up of quick population for spring by using pollen patties. Barb sells patties for $4.00 a piece at Stedman's. Patties are placed on the top of frames and adding sugar water on top will help.

Promotion
This year the meetings and classes will be publicized. Suggestions for outlets such as Craig's list, emails, periodicals, and involvement in community events such as school auctions and the like were made. Newspapers have already been contacted so upcoming meetings and classes can be publicized. There was some concern about gaining too many numbers in our meetings yet, that has yet to be an issue. The goal is to reach 70 members for maximum gain. That would gift us with plenty of experience and talent to grow individual beekeepers and maximize our outreach to the community.

The Buzzword, as a promotion tool as well as being offered on a subscription basis to non-members and interested individuals across the county, was brought up. We were encouraged to complete the Non-Profit status of our Association to assist in usage of materials in the newsletter in regard to the Fair Use Doctrine.
Legal concern for the sale of the newsletter was cited but by providing the newsletter as a thank you gift for, "Friends of the Association," who make a donation of a certain amount or more may be acceptable. It was decided to configure the costs of the newsletter before perusing this as an option.

Michelle spoke about community promotions via fairs and events. The creation of a booth or display was discussed. Education, Information, and Interaction were the three main areas of interest. These included vibrant ideas on observation hives, display items such as honey, study prints, wasp nests for comparison, a contest or drawing for products, a children's area. Other thoughts included interactive displays, extraction presentations, a life size dummy outfitted in a beekeeping suit, a wall of toxic product containers that would exhibit goods dangerous to bees and where to find these containers.

Our first display will be at EcoFest at Stillwaters Environmental Education Center in Kingston. The center is interested in beekeeping, bees importance to the environment, and the health benefits that honey and bees afford.

Michelle is compiling a list of fairs and events that we might choose to participate in. She asked for suggestions on events as well as content for booths and presentations. Anyone interested in helping with promotions or if you have suggestions you can contact Michelle at McMillenworld@hotmail.com.

Honey judging at the county fair was an area of interest. Some found the potential of volunteering our members for this purpose appealing. Paul Lundy promised to assist by providing information on judging honey and suggested that the journeyman's group, who must learn about honey judging, take on this responsibility.

OTHER
Ordering of Phacelia seeds was discussed
If anyone knows where to find an Evodia bee bee tree was brought to question

Need For Pollen

Roy Thurber, PSBKA Newsletter March, 1982

Again someone called wanting to talk about trapping pollen. Should they or should they not, etc... OK I think a person can probably make as much or more trapping pollen as they can off honey. Possibly one cannot only get pollen but also some surplus honey, but if pollen is trapped extensively, I am sure honey production will suffer and more management is necessary. Mr. John Corner, head of the apiculture branch of B.C. Ministry of Agriculture, turned my head around. I used to think that any day a bee could fly, she could and probably would bring in pollen (water carriers excepted) so they have no need of trapped pollen for the pollen supplement mixture. Johnny said quite often we have periods of bad weather during the spring build up and if, as it often happens, the bees run out of pollen, brood rearing stops. As a result you do not have the maximum field force flyers available to maximize the honey flow. So, if you want to get as much honey as you can out of a hive, you should have pollen cakes made up and frozen to put on after a week of rain. Anyone with 5 or more hives probably should have a pollen trap and put it on –accumulate a gallon of pollen and freeze it each year (even frozen pollen deteriorates, so it is an each year proposition). Now if you do not need to use the frozen pollen patties in a year, no problem –The next year you thaw them, add new pollen to the mix and refreeze. I find a gallon of pollen mixed into the other ingredients is plenty for twenty hives.

THE BEE MANAGER

The truth is, the science of Nature has been already too long made only a work of the brain and the fancy: It is now high time that it should return to the plainness and soundness of observations on material and obvious things.

Robert Hooke 1635-1703; *"Micrographia[1665]"*

By **Jerry Hominda**; **Email: goldenbee@juno.com**

I will begin my February piece with a brief summary of the 66th Annual North American Beekeeping Conference & American Beekeeping Federation Convention & Trade Show-it seems the title is longer than the information I have to share with beekeepers. The conference was held in Reno and I attended events from Wednesday afternoon through Saturday morning. The conference had information for beekeepers that are sideliners, commercial pollinators, commercial honey producers, and hobbyist-lots of information for the specific groups. I met beekeepers from all over the USA, including Alaska and Canada (only two from WA). In addition I met many of the people I have read about in different magazines and published articles. One of the things I got from this conference first hand was the fact, after sitting

around in groups and listening to other experienced beekeepers talk about their bee problems. Realizing it was coming from them not just articles I have read and the problems were happening everywhere on the continent no matter the climate or geography. Furthermore you get a better understanding of the seriousness of the problem when you hear from beekeepers who have lost 10-70% of their colonies which range from 1000 – 15,000 colonies in an operation. Of course the killer of colonies does not care the size of the operation.

Most of the sessions and workshops included researchers from various institutions and research labs discussing their research projects—most of the presenters were given approximately twenty minutes to discuss their topic. The primary topics of discussion at this conference were viruses and queen breeding (genetics), there was some discussion concerning mites and funguses. Basically the different researchers discussed the different techniques they were developing to identify if colonies had viruses causing their mortality. Most all the researchers claimed they identified viruses within the failing colonies and some said they found up to as many as 30 + viruses in a collapsing colony, but were not able to identify the specific virus with a name. There were several institutions that were working with colonies that had virus free queens from the Hawaiian Islands and they were able to isolate the colony so they were not exposed to outside contaminated colonies. One of these research facilities kept their colony in a green house completely isolated from the outside world.

They had tested the colony prior to isolating it in the greenhouse and claim that it was virus free, but over a short period of time the bees began dying. They tested the colony again and found Nosema and several other viruses that they were unable to identify. They researched further in attempt to find the source of contamination and they found that the viruses had been stored in the supplemental honey fed to the bees with frames removed from outside colonies. In addition, they found viruses in the pollen patties they were feeding the bees as well. I got a chance to talk to the presenter (Dr. Diana Cox-Foster, Dept. of Entomology, Penn State University, University Park) after the presentation and she was able to elaborate with more detail about their research colony and the findings. It was the first time I had ever heard of a virus being able to survive with out a host in honey and pollen. I guess something to think about after these findings is the source of your pollen and using frames of honey from other (sick) colonies to feed healthy ones. We have known that different funguses (American Fowl Brood, Nosema, spores) can survive (remain dormant) for long periods of time without a host and then incubate and grow in a healthy growing colony of bees and impact them with negative results.

I took time to talk too many of the different venders about some new products, tools and medications. Most everything being marketed has been available for some time. There was some new liquid, high energy, protein, vitamin (silver bullet) created by a Dr. from Alaska that supposedly has positive effects on colonies, there were a lot samples being given away, but I did not see any beekeepers buying quantities of the solution.

To sum up what I got out of the conference as well as other beekeepers I spoke to was that the researchers can tell us without a doubt we have viruses. They do not know what they are but, they know that the viruses are in collapsing colonies and healthy colonies. Furthermore, the researchers have not found any medication that controls the viruses that are new, but they did say a strong colony with a healthy queen has best opportunity to survive. The topic of queen breeding and genetics was a sensitive topic since there were many of the breeders from the east and west coast who think their queens are excellent. Although, several of the researchers that are working with queen breeding and hygienic stock strongly believe that it is a necessary part of beekeeping to control colony collapse disorder.

There was no discussion about oxalic acid because it is not legal to use in the USA. I might add for those who are thinking of using oxalic acid, there are many variations of mixture available,

but they are used in different environments then ours here in the northwest. I asked Jerry Hayes (Florida bee inspector and researcher) a question concerning the use of oxalic acid and he sent me an answer with the opening statement that it is illegal to use in the USA and a paragraph answering my question. In addition, I found out at the bee conference that he published my question and his answer in the 2009 February Issue of The American Bee Journal (I just found it and read it) and it was fairly informative for those interested in using oxalic acid.

Bee a good manager and enjoy the wonderful experience of beekeeping

Bees Do The Math!

ScienceDaily (Jan. 28, 2009) — The remarkable honey bee can tell the difference between different numbers at a glance. A fresh, astonishing revelation about the 'numeracy' of insects has emerged from new research by an international team of scientists from The Vision Centre, in Australia.

In an exquisitely designed experiment, researchers led by Dr. Shaowu Zhang, Chief Investigator of The Vision Centre and Australian National University and Professor Hans Gross and Professor Juergen Tautz of Wurzburg University in Germany, have shown that bees can discriminate between patterns containing two and three dots – without having to count the dots.

And, with a bit of schooling, they can learn to tell the difference between three and four dots. However at four, bee maths seems to run out: the team found their honeybees couldn't reliably tell the difference between four dots and five or six.

In the study, the bees flew though an entry of a Y-maze marked with a pattern of either two or three dots, which were signposts to the reward. They then had to choose between two patterns by correctly matching the number of dots, to find where the reward was – a feat they then managed to repeat reliably once they had learned that two dots at the first entry meant they had to look for two dots at one of the second pair of patterns, where the reward was hidden.

Careful control over the experimental environment showed the bees were not using colour, smell or other clues to find their way to the hidden sugar-water reward, says Dr. Zhang.

"My colleague Professor Srinivasan has demonstrated that bees can count up to four landmarks on their way from their hive to a food source. This new research shows they can tell the difference between different numbers – even when we change the pattern, shape or the colour of the dots!"

Presenting blue and yellow dots, stars and lemons, or random patterns didn't fool the clever insects, which continued to reliably navigate their way to the reward once they had figured out and memorised what the signs meant, based on number.

To begin with, the bees spent quite a bit of time scanning the dots. On later visits they zipped straight past them, once they knew what they meant.

"Bees can definitely recognise the difference between two, three and four – although four a little less reliably. This is a process known as 'subitizing' – which means responding rapidly to a small number of items.

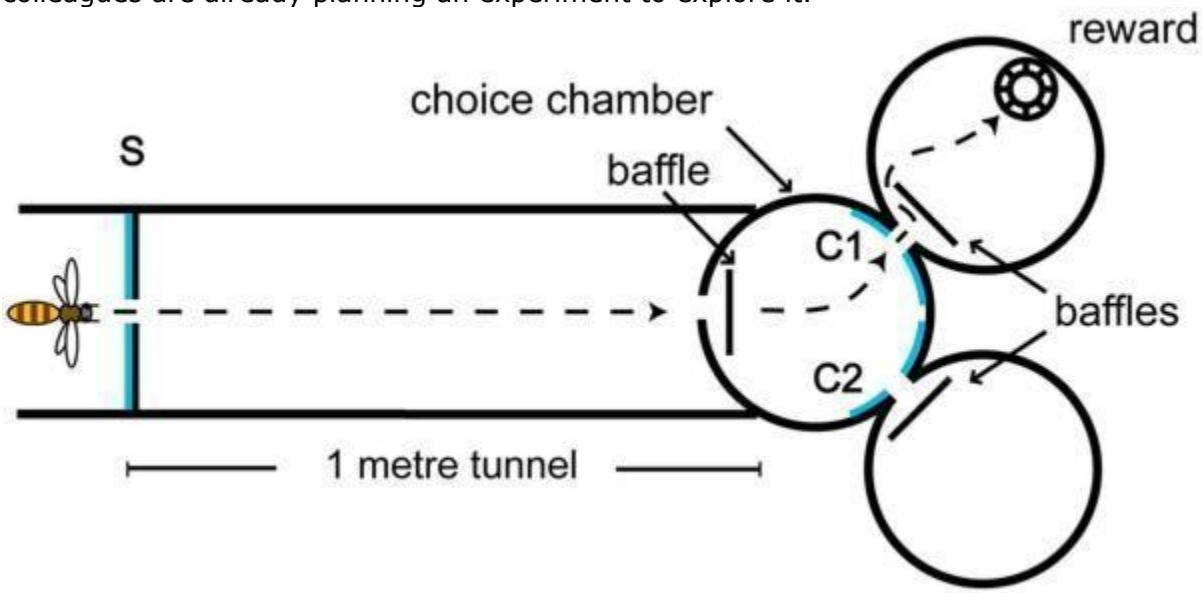
"We think the bees are using two memory systems," Dr. Zhang says. "First is working memory, which they use to recall the number of dots that point to the reward. The second system is to use memory rules. We found this out by changing the pattern of the dots - but the bees still managed to locate the reward."

The experiment also demonstrates the remarkable learning power of social insects, which have to go out foraging over long distances – the Vision Centre team has tracked bees over distances as great as 11 kilometres – and then find their way back to the hive, and out to the food source again reliably.

Dr. Zhang says the ability to discriminate between different numbers is part of this navigation, perhaps as bees pass clumps of two trees or three trees on their way to the food source, or use similar patterns among flowers or other landmarks as they draw close to it.

"There has been a lot of evidence that vertebrates, such as pigeons, dolphins or monkeys, have some numerical competence – but we never expected to find such abilities in insects. Our feeling now is that – so far as these very basic skills go – there is probably no boundary between insects, animals and us."

The tantalising question is whether bees can actually perform elementary arithmetic - and Shaowu and his colleagues are already planning an experiment to explore it.



Layout of the Delayed Match-to-Sample (DMTS) experimental apparatus. The bee encounters and flies through the initial sample pattern (S) before traversing a 1m-long tunnel with a perspex roof. There is a baffle behind the entrance of the decision chamber and baffles behind the entrances of the choice chambers The baffles prevented the bees from experiencing the stimuli in the decision chamber until they had entered it, and from viewing the feeder from the decision chamber. Upon entering the choice chamber, she is presented with two choice patterns (C1 and C2), only one of which (C1 in this case) has the same number of dots as S. The bee must choose the matching pattern C1 in order to obtain a hidden reward of sugar solution. (Credit: Gross HJ, Pahl M, Si A, Zhu H, Tautz J, et al.,

Disposición de la demora en vivo a la muestra (DMTS) aparatos experimentales. La abeja vuela a través de encuentros y el patrón de muestra inicial (S) antes de atravesar un túnel de 1 m de largo con un techo perspex. Hay una confusión tras la entrada de la cámara de decisión y deflectores detrás de las entradas de la elección cámaras deflectores El impedido que experimentan las abejas a partir de los estímulos en la decisión de la cámara hasta que había entrado, y de ver el alimentador de la decisión de la cámara. Al entrar en la elección de cámara, que se presenta con dos modelos de elección (C1 y C2), de los cuales sólo uno (C1, en este caso) tiene el mismo número de puntos de S. La abeja debe elegir un patrón de coincidencia C1 con el fin de obtener oculta una recompensa de solución de azúcar. (Crédito: HJ bruto, Pahl M, Si A, Zhu H, Tautz J, et al.,

Haga sus cálculos abejas!

Tendencias Cientificas (Enero 28, 2009) - El notable la miel de abeja puede decir la diferencia entre los distintos números de un vistazo. Una fresca, sorprendente revelación acerca de la "aritmética" de los insectos ha surgido de una nueva investigación de un equipo internacional de científicos de El Centro de Visión, en Australia.

En un experimento diseñado exquisitamente, los investigadores dirigidos por el Dr. Shaowu Zhang, Investigador Jefe del Centro de Visión y Universidad Nacional de Australia y el Profesor Hans Gross y Profesor

Juergen Tautz la Universidad de Wurzburg en Alemania, han demostrado que las abejas puedan discriminar entre los patrones que contienen dos y tres puntos - sin tener que contar los puntos.

Y, con un poco de la escolarización, que puede aprender a decir la diferencia entre tres y cuatro puntos. Sin embargo, en cuatro, abeja matemáticas parece agotado: el equipo encontró su forma fiable las abejas no pueden decir la diferencia entre los cuatro puntos y cinco o seis.

En el estudio, aunque las abejas voló una entrada de un laberinto Y-marcados con un patrón de dos o tres puntos, que eran señales de la recompensa. Luego tuvo que elegir entre dos modelos correctamente se pongan en venta por el número de puntos, para encontrar que la recompensa fue - una hazaña que se logró repetir con fiabilidad una vez que se enteró de que había dos puntos en la primera entrada significaba que tenían que buscar dos puntos en el segundo de un par de modelos, donde la recompensa se oculta.

Cuidadoso control sobre el medio ambiente experimental mostró que las abejas no estaban usando el color, olor u otras pistas para encontrar su camino hacia el agua de azúcar oculta recompensa, dice el Dr. Zhang.

"Mi colega, el profesor Srinivasan ha demostrado que las abejas pueden contar hasta cuatro hitos en el camino de su colmena a una fuente de alimento. Esta nueva investigación demuestra que puede decir la diferencia entre números diferentes - incluso cuando el patrón de cambio, la forma o el color de los puntos! "

Presentación de puntos amarillos y azules, las estrellas y los limones, los patrones aleatorios o no engañar a los insectos inteligente, que sigue su camino fiable navegar a la recompensa, una vez que ha calculado y memorizado lo que significa los signos, sobre la base del número.

Para empezar, las abejas pasado bastante tiempo de escaneo de los puntos. En visitas posteriores se les comprimido recto anterior, una vez que sabían lo que significaba.

"Definitivamente, las abejas pueden reconocer la diferencia entre dos, tres y cuatro - cuatro, aunque un poco menos confiable. Esto es un proceso conocido como 'subitizing' - lo que significa responder rápidamente a un número reducido de temas.

"Creemos que las abejas están usando dos sistemas de memoria", dice el Dr. Zhang. "En primer lugar es la memoria de trabajo, que se sirven para recordar el número de puntos que hacen referencia a la recompensa. El segundo sistema consiste en utilizar las reglas de memoria. Encontramos esto cambiando el patrón de los puntos - las abejas, pero todavía consiguió localizar a la recompensa ".

El experimento también demuestra la notable capacidad de aprendizaje de los insectos sociales, que tienen que salir de alimentación a través de largas distancias - Centro de la Visión equipo ha rastreado las abejas a distancias tan grandes como 11 kilómetros - y, a continuación, encontrar su camino de regreso a la colmena, y para la fuente de comida de nuevo con fiabilidad.

El Dr. Zhang dice la habilidad para discriminar entre los diferentes números de parte de esta navegación, quizás como las abejas pasan grupos de dos o tres árboles de árboles en su camino a la fuente de alimento, o utilizar patrones similares entre las flores u otros lugares, ya que cerca de sacar ello.

"Ha habido muchas pruebas de que los vertebrados, como las palomas, delfines o monos, algunos han numérica competencia - pero nunca esperaba encontrar estas capacidades en los insectos. Nuestra sensación ahora es que - la medida en que estas habilidades básicas ir -- no existe ningún límite entre los insectos, los animales y nosotros ".

La tentadora pregunta es si las abejas pueden realizar operaciones aritméticas elementales - y Shaowu y sus colegas ya están planeando un experimento para estudiar la misma.