Which Helmet for caving?

A tough quest for perfection...

1. Introduction

This investigative approach began August 6, 2015 by a petition on the Web following the despair of a caver friend who was depressed not be able to replace his Ecrin Roc with a new due because it was discontinued.

Having stirred up caving community, the petition received an unexpected success. Hundreds hoped, signatures are mounted to over 2000 in a few weeks (2230 at the time of this writing). With this in mind so I wrote an email the 01/10/2015 to the Petzl company with the following contents:

" *Madam, Sir,*

You may have heard that a petition circulating on the Net since August 6, 2015 highlighting concerns that the cavers and acrobatic workers around the world meet since the last stocks of helmets "Écrin Roc" and "Écrin ST" are exhausted. Currently this petition has just exceeded the bar of 2000 signatories stemming from several continents. (http://www.mesopinions.com/petition/sports/rendez-ecrin-roc-seul-vrai-casque /15289/page3).

I am one of two French speleologists at the origin of this petition, myself owner of 4 helmets exclusively of this model. Originally it was more a question of expressing a fit of temper in front of reduction of quality felt in passing the Écrin at Elios model, that to press your company to obtain again a helmet which satisfies our desires. But given the unexpected success of its launch (because even if the problems inherent in the system do not always confirm the signing, the number is considerable) our objectives have now changed.

ince) the beginning of this operation, we multiplied the events and the winks of eye to liven up this debate: group photos, misappropriations of image, "helmeted" aperitif etc. We speak about it even in the next issue about « Caving Mag », it's thus high time to turn now to serious matters.

(http://souterweb.free.fr/images/musee_ecrin_roc/apero_casque_ecrin_roc.htm)

Before going into the details and for this first contact, I conclude with two excerpts from your website, "Since its beginnings in caving, the vocation of the company is the same: imagine concrete tools to allow human to excel. Today pioneering spirit, passion for exploration, the values have not changed." These are two sentences that we go to the heart and I also unearthed it we can only applaud with both hands (after clipping your cows tail on rock)" Our objective: to put at your disposal the expertise of a dedicated team for Petzl answers to specific requests. "

Hope these few lines are not words that fly on underground air currents and waiting to read you, receive my sincere greetings helmeted. "

2. Seven helmets to be tested

Following receipt of this message, the PETZL company responsible for the customer relationship kindly answered me by offering to perform a series of tests on the Petzl helmets currently available to identify our needs and thereafter, to see it might be possible to do during a meeting in person. To this end the company PETZL put at our disposal to try the new helmets.

Here helmets, which arrived promptly by mail in two large packages, to carry out this investigation work (photographed here after the test phase during the summer of 2016):

So I launched into the cavers research available to establish an evaluation test protocol for these helmets. A list was drawn up on Google Docs to record the volunteers: a total of 40 people including the following profile.

Average age:	**42,86**	**Mens:**	**32**	**Caving divers:**	**5**
		Womens:	**8**	**Canyonists:**	**17**
				Climbers:	**9**

With them, an evaluation form (or test evaluation sheet) was written to make examine closely helmets sent by PETZL. There she is :

EVALUATION FORM about 7 PETZL HELMETS
NB : Each item will be assessed with a simple scale: 0 = absent, zero or very poor / 1 = acceptable, fair or average / 2 = good, fair or efficient /
Section A : comfort

N°	Point to test	Test method and précisions	AB	AV	E	M	S	VB	VV	Comment
A1	Adjustment 1	Put the helmet on and adjust it without gloves: easy and fast?								
A2	Adjustment 2	Put the helmet on and adjust it with gloves: easy and fast?								
A3	Adjustment 3	Fitted helmet on the head, disadjust and set it again: easy and fast?								
A4	Position on the head	Fitting helmet, looking in the mirror, photograph: appearance?								
A5	Ventilation and heat	Test at home by 20 ° C for 1h: sweating?								
A6	Insulation cold / humidity1	Test underground or outside the winter (if winter cold !!!): sensation?								
A7	Insulation cold / humidity 2	If ventilation holes: ease and speed to close? (0 = not planned closure of origin).				0	0			AB et VB not evaluable because unventilated.
A8	Fit on the head 1	Fitted helmet, shaking head D / G, lean forward / reverse, jump: stability?								
A9	Fit on the head 2	Fitted helmet, positioning a ponytail: practice?								
A10	Fit on the head 3	Helmet size: evaluate the amplitude in cm (max-min). if > 14 = 2, from 12 to 14 = 1, if < 12 = 0 *(1 cm = 0,393701 in)*	0	0	1	1	1	0	0	NB : cm, AB53-63, AV53-63, E48-61, M48-61, S48-61, VB53-63, VV53-63
A11	Fit on the head 4	Helmet size: evaluate the choices (TU or more sizes). TU = 0, two sizes = 1, > = 2 two sizes	0	0	1	1	1	0	0	Elios, Meteor, Sirocco : two sises; others TU.
A12	Chin strap quality	Adjust the helmet: sensation chin strap under the chin, crossing the ears?								
A13	Vertical shock	Get up (chin on chest to high head) and strike a smooth ceiling: sensation?								
A14	Weight 1	Wear the helmet one hour (see test A5) and 6 hours minimum: sensation?								
A15	Weight 2	Real weight in grams. > 400 g = 0, entre 250 et 400 g = 1, < 250 g = 2	1	1	1	2	2	0	0	NB, max weight builder data: ER445, AB350, AV340, E330, M225, S165, VB455, VV455
A16	Weight 3	Sensation and printing related to weight: subjective rating.								
A17	Esthetics	Number of colors availables? Only one = 0, two or three = 1, more than three = 2	1	1	2	2	0	2	2	NB, number of colors available: ER2, AB3, AV3, E4, M4, S1, VB6, VV6

Section B : practical use

N°	Point to test	Test method and précisions	AB	AV	E	M	S	VB	VV	Comment
B1	Space under cap	Try placing a thin survival blanket: result?								

B2	Reaction to soft mud	Rub the helmet on the ground in wet clay zone: penetration of the mud?								
B3	Reaction to clay	Rub the helmet on the ground in wet clay zone: penetration of the clay?								
B4	Lighting 1	Try to set the torches on the side of the helmet with air chamber: result?	0					0		
B5	Lighting 2	Identify areas F / R and drill to mount a headlamp and a battery: easly?								
B6	Lighting 3	Place the electric cable from FRONT to REAR: protected and easy path?								
B7	Lighting 4	Place a rescue headlight on the helmet: easly?								
B8	Multipurpose 1	Possibility of adapting a visor (unblocking, emergency): yes = 2 / no = 0?								
B9	Multipurpose 2	Ability to adapt an anti noise headphone (unblocking, emergency): yes = 2 / no = 0?								
B10	Multipurpose 3	Drilling or fastening system for an headlight (EPI guarantee for professionals and clubs): yes = 2 / option = 1 / no = 0?	0	0	1	0	0	1	0	Option for Elios and Vertex Best : sold mounted with a headlamp.
B11	Multipurpose 4	Put a balaclava under the helmet (cold cavity): Easy, holding the helmet with the hood?								
B12	Reaction on sharp fall	If the helmet flip forward under brutal shock, the front edge of the helmet should not be able to split the bridge of the nose it happened 3 times!). He knocks the helmet: yes = 0/2 = not?								

Section C : wear and durability

N°	Point to test	Test method and précisions	AB	AV	E	M	S	VB	VV	Comment
C1	Vertical shock	Get up (chin on chest to high head) and strike a rough ceiling: appearance?								
C2	Cleaning mud	Dirty helmet rubbing wet clay floor area: easy washing and drying?								
C3	Resistance	Sit on the helmet (weight body > 80 kg): structure reaction?								
C4	Durability	Watch the general appearance of the helmet after all the test: results?								
		Form completed from :			**to :**			**by :**		

3. Procedure and results of the test phase

The enthusiasm for this launch then faces the reality principle. We had a great test sheet but how to fill it? The helmets are not easily moved across the whole French karstic territory with their test forms, even if everything was stored in a plastic box (see photo next page). So we have to find in my surroundings and friends cavers to retrieve the helmet, try them, fill out the forms and return them.

The first opportunity that presents itself is the FFS training the week of February 27 to March 5, 2016 in St Bauzille de Putois Hérault I am "human resources". In addition to the need to make a few hundred snacks and a documentary fund, so I'll bring the helmets. After presentation to the trainees and managers of the principle and the importance of this phase, it's very funny to see the joy that some will put into the testing by jumping head first against the wall with the available models.. Thank you to Florian who led me in this adventure.

Picture 1: the group's winter caving training 2016, the helmets are left on the table.

More seriously some trainees and managers take helmets with them on their caving explorations to compare with them or try a new one: the Sirocco model that is visible from afar and out of the ordinary will be very successful, even if they had nicknamed "pumpkin". The filling of forms will be less alas ... This is understandable: the form is complex, not easy to take underground, and caving trainers they do not have many time to fill out paperwork (and managers no more); then especially will exchange our impressions in person, over a drink in the evening.

Some people will record their findings on forms but for a different use (caving explo comment for example). Regardless, there are returns that will be helpful me and that's what counts.

Picture 2: Three helmets Saint Bauzille de Putois.

Picture 3: helmets and beers to motivate...

Picture 4: Test the Alveo Vent cliff in the gorges of the Herault.

Subsequently, the "training test" formula being rather successful, I will try to take them in other caving expeditions by entrusting them to club friends: thank you to Francky, Clo, Jean-Michel...

- They first went to train with the SSF during an April weekend.
- Then, the Easter weekend, the pack of helmets goes to test in EFS course on the Albion's Plateau.
- During spring break he changed region to join the Elancourt club (southwest of Paris) where twenty cavers have welcomed.
- I even had a proposal (Brice thank you) to try them on a cave diving course in the Lot near Figeac but unfortunately a change of venue (Vercors) failed to finalize the idea because we could not bring them.
- Finally in June the black plastic box (see photo) went in the Spanish Pyrenees canyon to subject our shells some aquatic tests.

The only small problem we encountered every time is that as this winter in St. Bauzille, it was much more difficult to fulfill the test sheets than try helmets. Perhaps we have tried to do too much and that he simply had to establish a small form of a few lines with the model of the helmet and the general impression that emerged after the test.

See compilation of the results of tests following pages:

NB: The number of testers who responded favorably evaluating each criterion was converted to %. For example, if a test is 100% noted in the column "VV" is that all testers responded positively to the question posed for this helmet (VERTEX Vent). Conversely if 0% appears in the column "M" is that no tester has responded favorably to this criterion for this model (METEOR), or that it was impossible to test, whether the test s' really proves negative. The values are not very different (0, 25, 50, 67, 75, 83, 88, 100) as there was no returned many records. Shaded cells indicate that the criteria have not been evaluated by the testers. The VERTEX Best has not been tested.

Section A : comfort										
N°	**Point to test**	**Test method and précisions**	**AB**	**AV**	**E**	**M**	**S**	**VB**	**VV**	**Comment**
A1	Adjustment 1	Put the helmet on and adjust it without gloves: easy and fast?	**100%**	**100%**	**100%**	**75%**	**67%**		**100%**	
A2	Adjustment 2	Put the helmet on and adjust it with gloves: easy and fast?	**50%**	**100%**	**100%**	**50%**	**67%**		**88%**	
A3	Adjustment 3	Fitted helmet on the head, disadjust and set it again: easy and fast?	**100%**	**100%**	**100%**	**25%**	**83%**		**100%**	
A4	Position on the head	Fitting helmet, looking in the mirror, photograph: appearance?		**50%**	**50%**		**0%**		**25%**	
A5	Ventilation and heat	Test at home by 20 ° C for 1h: sweating?		**50%**	**75%**	**50%**	**50%**		**75%**	
A6	Insulation cold / humidity1	Test underground or outside the winter (if winter cold !!!): sensation?	**100%**	**100%**			**100%**		**83%**	
A7	Insulation cold / humidity 2	If ventilation holes: ease and speed to close? (0 = not planned closure of origin).		**0%**	**25%**	**0%**	**0%**		**100%**	AB et VB not evaluable because unventilated.
A8	Fit on the head 1	Fitted helmet, shaking head D / G, lean forward / reverse, jump: stability?	**100%**	**50%**	**75%**	**50%**	**83%**		**75%**	
A9	Fit on the head 2	Fitted helmet, positioning a ponytail: practice?		**50%**						
A10	Fit on the head 3	Helmet size: evaluate the amplitude in cm (max-min). if > 14 = 2, from 12 to 14 = 1, if < 12 = 0 *(1 cm = 0,393701 in)*	**0%**	**0%**	**50%**	**50%**	**50%**	**0%**	**0%**	NB : cm, AB53-63, AV53-63, E48-61, M48-61, S48-61, VB53-63, VV53-63
A11	Fit on the head 4	Helmet size: evaluate the choices (TU or more sizes). TU = 0, two sizes = 1, > = 2 two sizes	**0%**	**0%**	**50%**	**50%**	**50%**	**0%**	**0%**	Elios, Meteor, Sirocco : two sises; others TU.

A12	Chin strap quality	Adjust the helmet: sensation chin strap under the chin, crossing the ears?	**75%**	**75%**	**50%**	**100%**	**83%**		**88%**	
A13	Vertical shock	Get up (chin on chest to high head) and strike a smooth ceiling: sensation?	**50%**				**50%**		**100%**	
A14	Weight 1	Wear the helmet one hour (see test A5) and 6 hours minimum: sensation?	**100%**	**100%**			**100%**		**75%**	
A15	Weight 2	Real weight in grams. > 400 g = 0, entre 250 et 400 g = 1, < 250 g = 2	**50%**	**50%**	**50%**	**100%**	**100%**	**0%**	**0%**	NB, max weight builder data: ER445, AB350, AV340, E330, M225, S165, VB455, VV455
A16	Weight 3	Sensation and printing related to weight: subjective rating.	**100%**	**75%**	**75%**	**100%**	**100%**		**50%**	
A17	Esthetics	Number of colors availables? Only one = 0, two or three = 1, more than three = 2	**50%**	**50%**	**100%**	**100%**	**0%**	**100%**	**100%**	NB, number of colors available: ER2, AB3, AV3, E4, M4, S1, VB6, VV6

Section B : practical use									
N°	**Point to test**	**Test method and précisions**	**AB**	**AV**	**E**	**M**	**S**	**VB**	**VV**	**Comment**
B1	Space under cap	Try placing a thin survival blanket: result?	**0%**	**0%**	**0%**	**0%**	**17%**		**83%**	
B2	Reaction to soft mud	Rub the helmet on the ground in wet clay zone: penetration of the mud?			**75%**	**50%**	**100%**		**50%**	
B3	Reaction to clay	Rub the helmet on the ground in wet clay zone: penetration of the clay?			**75%**	**50%**	**100%**		**50%**	
B4	Lighting 1	Try to set the torches on the side of the helmet with air chamber: result?	**0%**	**0%**	**0%**	**100%**	**25%**	**0%**		
B5	Lighting 2	Identify areas F / R and drill to mount a headlamp and a battery: easly?	**100%**	**100%**	**100%**	**0%**	**67%**		**100%**	
B6	Lighting 3	Place the electric cable from FRONT to REAR: protected and easy path?	**50%**		**100%**	**0%**	**50%**		**50%**	

B7	Lighting 4	Place a rescue headlight on the helmet: easly?	**100%**	**100%**	**75%**	**50%**	**75%**		**100%**	
B8	Multipurpose 1	Possibility of adapting a visor (unblocking, emergency): yes = 2 / no = 0?	**100%**	**100%**	**0%**	**0%**	**0%**		**100%**	
B9	Multipurpose 2	Ability to adapt an anti noise headphone (unblocking, emergency): yes = 2 / no = 0?	**100%**	**100%**	**0%**	**0%**	**0%**		**100%**	
B10	Multipurpose 3	Drilling or fastening system for an headlight (EPI guarantee for professionals and clubs): yes = 2 / option = 1 / no = 0?	**0%**	**0%**	**50%**	**0%**	**0%**	**50%**	**0%**	Option pour Elios et Vertex Best : vendus montés avec lampe Petzl Vario.
B11	Multipurpose 4	Put a balaclava under the helmet (cold cavity): Easy, holding the helmet with the hood?	**100%**				**75%**		**100%**	
B12	Reaction on sharp fall	If the helmet flip forward under brutal shock, the front edge of the helmet should not be able to split the bridge of the nose it happened 3 times!). He knocks the helmet: yes = 0/2 = not?	**100%**				**100%**		**100%**	

Section C : wear et durability									
N°	**Point to test**	**Test method and précisions**	**AB**	**AV**	**E**	**M**	**S**	**VB**	**VV**	**Comment**
C1	Vertical shock	Get up (chin on chest to high head) and strike a rough ceiling: appearance?	**100%**		**100%**	**100%**	**50%**		**100%**	
C2	Cleaning mud	Dirty helmet rubbing wet clay floor area: easy washing and drying?		**100%**	**100%**		**0%**		**100%**	
C3	Resistance	Sit on the helmet (weight body > 80 kg): structure reaction?	**100%**			**100%**	**100%**		**100%**	
C4	Durability	Watch the general appearance of the helmet after all the test: results?		**100%**	**75%**	**100%**	**63%**		**100%**	

4. A further investigation

The observation above, germinated the idea of extending the consultation in two directions:

- first to cavers who were not necessarily testers
- then to all models of helmets used by cavers from different backgrounds.

So I launched on 08.21.2016 caving mailing lists of France, Belgium and Switzerland the following call:

" *Hello everyone,*
Following reflection on helmets (see history at the end of email), I would complete the evaluation forms that I have recovered with a little "survey" of opinion. What is it about ?
I would like to know :
** The model and brand of your current helmets * strong point (s) or benefit (s) * low point (s) or defect (s)*
Needless to long sentences, I will interpret: in a few words it should take less than two minutes. To simplify your life, I send in few seconds on this list a mail to return / complete by "Reply privately."
Thank you for your participation.
Domi from SOUTERWEB "

This message will then be relayed beyond the Francophone community through Facebook, UIS and even the International Speleological Expeditions (thank you Jean-Pierre). The, answers (much of it written in English) arrived from all around the world. In the end the participants will represent the following geographical areas: France, Belgium, Switzerland, Austria, Czech Republic, Germany, UK, Russia, Turkey, Lebanon, Israel, Tanzania, Japan, Singapore, the Philippines, Venezuela, Brazil, Quebec...

As shown in the results tables reproduced in the pages that follow, it is clear from this survey that draft:

1. given the number of participants, the data have a serious value,
2. Petzl trademark is by far the most represented on the heads of the caving community,
3. Ecrin Roc model, despite its lack of linear for several years, is still the reference headphones for most of us *
4. key quality criteria are: the setting and the good performance on the head, the actual or perceived strength, lightness and ventilation,
5. The main deficiencies are: difficulty setting, weight, poor fit on the head, fragile parts and the polystyrene inner shell.

* This remark deserves to be weighted because the rate of 50% Ecrin Roc is probably a little higher than the reality. In fact when we made a group photograph in caving (see next page for example) and that the carefully observed, there are many other models on the heads. To be precise, we should say that the Ecrin Roc is the model most used by those interested enough in the quality of a helmet to participate in this survey. The bias also is that some cavers have several helmets and strangely they are often owners of Ecrin Roc. This is perhaps a recognition of quality: when you love, number does not count; and conversely, «Why buy more helmets of the same model, if you think about change it soon because it does not fully satisfy us?». We must add that the average age of cavers is relatively high (compared to those of other more "traditional" sports) and these cavers do not have the profile of those who often change material for a simple question of look or influenced by marketing slogan "all new is better and beautiful." The forties (and more) are perhaps more sensitive to the strength and durability or the nostalgia of old habits than younger.

Picture 5: a training cliff and these helmets.

In addition, these data would need to be refined model by model or item by item.
For example, the criterion "weight" is particularly complex. For Ecrin Roc users weight is typically the only default mentioned (although two users find the light!); the lightness of his side is a criterion of choice for users of polystyrene shell helmets (this is obvious but noteworthy).

Setting the Ecrin Roc helmet with its two large wheels and wide straps made almost unanimously, except for those who have a small head circumference. Due to the size of this single model (and probably its weight combined with that of the lamp if it is heavy), some cavers fail to make it fit properly in place even tightened. A caving club's highlights that a simple adjustment is not a single element of comfort. It is also a guarantee of safety in case of exit framed with beginners. This allows for better autonomy of the trainees and thus free the instructor to worry about adjustment, to save time and so, allowing it to focus on more serious matters. In this regard, the cap fully strap (like on the Ecrin Roc) does not seem to pose security concerns in the event of major shock unlike various plastics parts of some models which I have been repeatedly reported that they had nicked leather scalp or ears (Elios).

Aeration is acclaimed especially when it is resealable like on Elios or Vertex Vent as removable caps of the Ecrin Roc are never there when we needed one. For air circulation, the styrofoam cap keeps you warm and is contrary to the comfort brought by the vents in temperate cavities, or on cliff. In a polystyrene shell, the vents (impossible to be sealed) must to be carved so that runoff water can not get inside in this way; this is usually the case on the models tested.

The position of the vents of the Ecrin Roc are not optimal when ramping on soft clay: it can get inside (a phenomenon called "cheese grater"); by cons it is ideal for divers cavers who can easily attach additional lights torches.

Criterion "fit on the head" is particularly important in the investigation of August 2016. Indeed, during the previous testing phase and for helmet models like the Sirocco for example (or like Meteor and Elios) that are manufactured in two sizes, the model we received was a T2. So all cavers who tested them and had a rather small head circumference necessarily found that they did not take correctly on the head. We did not see this problem until after the test; hence the need to have in this survey the user's opinion whose the usual helmet have the good size.

The polystyrene shell that changes enormously buoyancy of the helmet makes some models unusable in cave diving or very unstable in canyon big jumps. In addition, all those who hoped to place above the cap space their survival blanket, are for their expenses (although that's not recommended, what is worse: having a survival blanket between cap and hull in case of stone fall or, when an accident occur, risk not find because it was lost in the depths of a kit-bag or forgotten at home?).

Finally it is noteworthy that the price criterion is very little important (14th position out of 16): the cavers would they be rich or simply do not they look at the expenditure for this eminently essential accessory? It is likely that it would be significantly different if one were to ask those responsible for purchases of equipment (clubs, professionals). But in this case it is the ratio of purchase price / durability EPI that should be considered.

NB: the prevalence of this or that criterion was calculated on the three lines of "ranking" of 1 to 15 or 1 to 16. The five most cited criteria (1 to 5) are writed in red on a yellow background, the others are blue.

HELMET SURVEY 2016

COUNTING MODELS

CAMP Rockstar / Safety star	CAMP Armour	PETZL Elios / Spelios	PETZL Ecrin roc / Explorer	PETZL Ecrin best / Ecrin st	PETZL Alveo vent	PETZL Vertex vent	PETZL Vertex best	PETZL Sirocco	SALEWA Toxo / Toxo G2	EDELRID Ultralight	CAVING SUPPLIES Protex	BLACK DIAMOND Half dome	OTHERS : EMS Colombet, MONTANA Focus, DELTA PLUS Granite Wind, SUPERPLASMA PL, Alu Mine + TOURBIN	No french answer 25 Total answers
4	2	15	53	3	1	14	1	1	3	5	2	4	5	113
5,31%		77,88%							2,65%	4,42%	1,77%	3,54%	4,42%	% trademark

EVALUATION CRITERIA

WEIGHT	KEEPING	SIZE	AIRING	PRICE	ORIGIN	STRENGTH	CAP	SHELL	ADJUST	CHINSTRAP	LOOK	LAMP	SHAPE	MAINTENANCE
QUALITIES MOST FREQUENTLY CITED														
Lightness	Held on head / balance	Suitable size (choice)	Ventilation / shutter	Low price	Made in France	Strength / durability	Indoors straps cap	Space under cap	Easy headband adjustment	Easy chinstrap	Look (shape, color)	Easy fixing headlight / brackets	Suitable form caving / versatility	Easy cleaning or renovation
35	38	16	29	10	1	38	26	25	49	19	11	25	26	4

POIDS - WEIGHT	TENUE - KEEPING	TAILLE - SIZE	VENTILATION - AIRING	TARIF - PRICE	ORIGINE - ORIGIN	ROBUSTESSE - STRENGTH	COIFFE - CAP	CALOTTE - SHELL	RÉGLAGE - ADJUST	JUGULAIRE - CHINSTRAP	ESTHÉTIQUE - LOOK	LAMPE - LAMP	FORME - SHAPE	ENTRETIEN - MAINTENANCE	
4	2	11	5	13	15	2	6	8	1	10	12	8	6	14	CLASSEMENT

DÉFAUTS LES PLUS SOUVENT CITÉS / DEFECTS MOST FREQUENTLY CITED															
Lightness	Held on head / balance	Suitable size (choice)	Ventilation / shutter	Low price	Made in France	Strength / durability	Indoors straps cap	Space under cap	Easy headband adjustment	Easy chinstrap	Look (shape, color)	Easy fixing headlight / brackets	Suitable form caving / versatility	Easy cleaning or renovation	No longer marketed
23	16	8	5	1	1	16	9	11	8	11	4	6	7	4	9
POIDS - WEIGHT	TENUE - KEEPING	TAILLE - SIZE	VENTILATION - AIRING	TARIF - PRICE	ORIGINE - ORIGIN	ROBUSTESSE - STRENGTH	COIFFE - CAP	CALOTTE - SHELL	RÉGLAGE - ADJUST	JUGULAIRE - CHINSTRAP	ESTHÉTIQUE - LOOK	LAMPE - LAMP	FORME - SHAPE	ENTRETIEN - MAINTENANCE	VENTE - SALE
1	2	7	11	14	14	2	6	4	7	4	12	10	9	12	6

TOTAL des OCCURRENCES (QUALITE + DEFAUT) :

58	54	24	34	11	2	54	35	36	57	30	15	31	33	14	8
POIDS - WEIGHT	TENUE - KEEPING	TAILLE - SIZE	VENTILATION - AIRING	TARIF - PRICE	ORIGINE - ORIGIN	ROBUSTESSE - STRENGTH	COIFFE - CAP	CALOTTE - SHELL	RÉGLAGE - ADJUST	JUGULAIRE - CHINSTRAP	ESTHÉTIQUE - LOOK	LAMPE - LAMP	FORME - SHAPE	ENTRETIEN - MAINTENANCE	VENTE - SALE
1	3	11	7	14	16	3	6	5	2	10	12	9	8	13	15

5. <u>Question asked during the cavers meeting “Caussenards 2016”</u>

On this occasion I tried to understand the problem in another way. Since you have a regular helmet is that it is probably at least the least bad. So what would it take to make it even better? Unfortunately, a sudden storm has constrained us to store the urn (cardboard) much before she was full; but I've still got some answers here:

HOW TO BE MODIFIED TO TURN MY HELMET PERFECT?

PETZL Elios / Spelios	PETZL Ecrin roc / Explorer	PETZL Sirocco
Remove the vents.	Nothing.	Nothing.
A headband adjustment that does not unadjust.	Lighten without putting a polystyrene shell.	Rear elastic ties stronger.
A polystyrene inner shell which does not disintegrate.	Two sizes with one for smaller heads.	Non perforated area wider (front and rear) to power the drill and to place easily the headlamp and its battery.
A textile cap to put the emergency blanket.	Nothing.	
No styrofoam shell.	Nothing.	
A textile cover.	Removable cap for washing.	
Ventilation flaps that do not move alone.		

6. Final Results

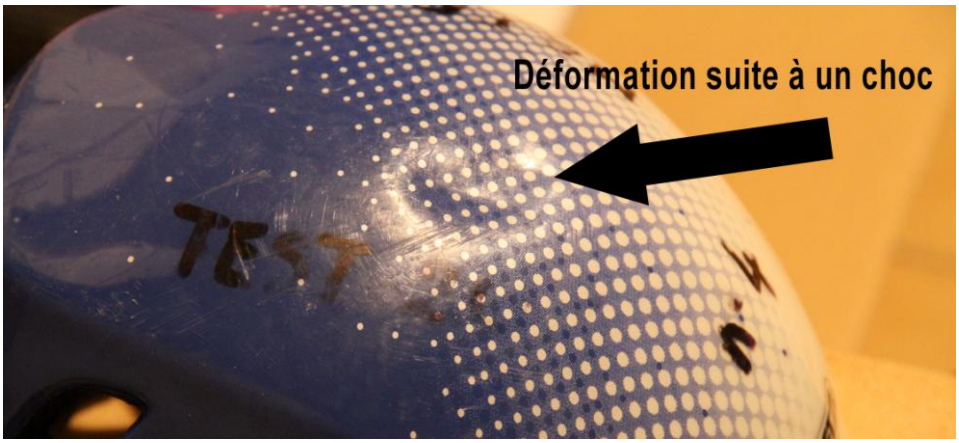
After all these tests, some wounds were observed on the helmets that some were not brand new! Others are more resistant than their appearance suggests as the Sirocco which expanded polypropylene (EPP), although scoring quickly in contact with the sharp points of the walls, returns to its original shape after receiving a big blow. The expanded polystyrene from the METEOR helmet much suffering (permanent deformation), but misery is hidden by the thin decorative film.

Sirocco : the two tabs of the elastic gave way. Traces of heavy use (only on surface).

.

ALVEO and ELIOS, accessories damaged or insecure: frontal fixings, ventilation flaps.

.



METEOR: after a strong shock, the hull is distorded.

To conclude, if we were draw a portrait of the ideal helmet, provided that this is feasible, it could have the following characteristics:

- easy adjustment by large wheels acting on a headdress wide straps,
- a jugular handled with gloves and without magnet to disturb compass,

- a shell rather flat for easy washing and having two areas for drilling in the front and rear to suit the kind Scurion lamps and batteries,
- very little polystyrene in the shell,
- strong integrated ventilation flap closed up and insensitive to clay,
- minimum two sizes to fit all head sizes,
- a removable internal straps cap to be washable and authorizing the wearing of hoods for cold caves,
- an internal volume for housing at least a thin survival blanket,
- a relatively light weight,
- a caving look. While there, obviously we could debate for a long time: what is a caving look? The points that seem to consensus are: easily washable shape, the smallest volume possible for narrow passages, cutting protecting the ears laterally stable and dimensionally stable form the ground when one sits above (> = 100 kg), a front and rear structure to facilitate fixing headlamps like Scurion or same.
- available in several colors.

When looking at the above, perhaps we said we just invented the "Squaring of the helmet". Profile that emerges would give us a kind of Vertex Vent whose hull would not have a look "building site" (or Elios without polystyrene), with the largest adjustment knobs, and more for the caving associations or the professionals would be pierced without breaking rules of EPI, not too expensive, versatile and last but not least ... light: it may well not be easy!

7. Outlook?

Since the disappearance of Ecrin Roc outlets, improving reference caving helmet, if indeed it exists again a one day, is not a trivial matter but a real security problem. In fact during this investigation I have seen several phenomena that could one day endanger the life of one or one of our teammates (eras) and make the outcome of this discussion all the more important.

Some practitioners, disappointed by helmets models they are currently on sell drop out after one or two unsatisfactory purchases and they return to their old helmet (Ecrin Roc, Ecrin, even older models), and the quality of the plastic probably decreased over time. Others, surprised by the discomfort that gives them the inner shell of polystyrene, cut a part of it (to fix a headlamp or to place easier here a survival blanket); in at least one case the cap was completely removed altogether. For them, which does it remain about initial helmet protection, without speaking of the rules of EPI (which does not enter online of account because they are individual helmets)? How much are we in this situation?

The following is looming: reconnect with my interlocutor at Petzl, agree on a place and date of RV, discuss and see what comes out ... "There's just to..." as they say.

Dominique ROS
Wikicaves secretary,
webmaster of SOUTERWEB
member of CLPA, SCM and FFS.
Photo credit: Dominique R., Eric S., R. Florian Sylvain M.